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BRITISH BIRDS

NUMBER I, VOL. XLV, JANUARY, 1952.

EDITORIAL: SIGHT-RECORDS OF RARE BIRDS.

ACCURATE sight-records of rare birds are important because they add to knowledge without causing the destruction involved by the alternative method of collecting specimens, but sight-records are of very little value if not above suspicion.

With the great spread of bird-watching in recent years, records are now being submitted by observers of widely varying ability and experience, most of whom are inevitably not personally known to the Editors. The verification of sight-records is thus becoming increasingly difficult, and the Editors feel that they cannot hope to discharge their task successfully without increased assistance from observers and consultation with other ornithologists in the region of the observation. Observers are asked, when submitting for publication a note on an unusual bird, to send a covering letter giving all other details which may have a bearing on the record, including :—

Previous experience of the species at home or abroad.

Previous experience of other species with which confusion seems possible.

Amplification of any part of the note to be published.

If possible a rough sketch or diagram.

Steps taken to obtain confirmation of the record by experienced observers.

Name of an ornithologist, known to the Editors, to whom reference may be made.

If another observer can confirm the record, his statement should be attached.

All such particulars relating to a record will be preserved.

On the question of consultation with regional ornithologists, we hope to achieve an even closer co-operation with the editors of local reports than has existed in the past. We have already been in communication with many of them and are most gratified by the number of expressions of whole-hearted support for our proposals. These include the continued publication in *British Birds* of records of rarities of national significance, while records of lesser rarities which can more appropriately appear in local reports will normally be passed to their editors for this purpose.

In an attempt to eliminate all erroneous and doubtful records it is inevitable, as it always has been, that some good records will also be rejected. Our rejection of a record should not be taken to imply that we regard the identification as wrong ; it may simply mean that insufficient proof has been provided. Although in such circumstances we may feel that a record is very likely to be correct we do

not normally propose to publish it as a "probable." Nevertheless, we hope that observers will continue to send us their records even when they are doubtful whether they have enough supporting evidence to make the observation a certainty ; subsequent events sometimes confirm a report of this kind, or it may tie in with those of other observers.

We take this opportunity of reminding observers of the following points which have been included in recommendations by H. F. Witherby, H. G. Alexander and B. W. Tucker on making field-notes (*antea*, vol. xxiii, pp. 343-4 and vol. xxxviii, pp. 89-93) : do not record a bird as seen unless you have *taken down on the spot* its characteristics *before* consulting a work on ornithology. It is entirely unsatisfactory to view a bird in the field, taking insufficient notes, and then, finding its supposed portrait or description in a book, even a short time afterwards, to proceed to work out an account or sketch of what was seen.

Field-notes should state :—

1. Distance of bird from you, whether you were using glasses or not, and nature and direction of light.
2. Nature of ground it was on and what other birds (if any) it was associating with.
3. Whether you saw it from different angles ; whether at rest or in flight ; whether from above or below. (The more varied the conditions of observation the better.)
4. What were its actions and what was the character of its flight compared with other birds.
5. Its general form as compared with other birds, and how it differed from other birds at all like it which are known to you.
6. Its size, provided it could be compared with that of another bird of a known species seen close to it. (Otherwise estimates of size are very unreliable.)
7. Particular points in structure as compared with other birds, such as size and shape of bill, length of legs and feet, shape of wing, length of tail.
8. Colour of bill, legs and feet ; any distinctive white or colour patches or markings, and their exact position. (Some general anatomy should be learnt so that you can give the colour of wing-coverts, under tail-coverts, nape, throat, chin, or other parts of the plumage accurately.)
9. So far as possible, an exact description of the whole plumage of the bird, not only the parts that you think may help in identifying it.
10. Any calls or notes, indicating especially the quality of the sound (harsh, rattling, shrill, hoarse, liquid, etc.) and comparison with notes of other species if this assists the description.

THE STATUS OF THE LESSER BLACK-BACKED GULL.

By

J. A. G. BARNES.

(A Report to the British Trust for Ornithology)

INTRODUCTION

THE main purpose of the Enquiry, conducted with the help of the British Trust for Ornithology in the winters of 1949-50 and 1950-51, was to obtain definite information on the present winter status of this species in the British Isles and, if possible, to discover if there had been any significant change in recent years. An extension of the Enquiry in 1950 to cover the migratory movements of this gull will be the subject of a separate report.

It is remarkable what contradictory accounts have been published in the last sixty years of the status of such a common and well-known bird. Up to 1910 the Lesser Black-backed Gull (*Larus fuscus*) is almost invariably described both in the national and local literature as a resident species. The following sample quotations are typical of many: Howard Saunders (*Manual of British Birds*, 1899), "resident in the British Isles . . . except perhaps in the north . . . In Ireland the species is found throughout the year." D'Urban and Mathew (*Birds of Devon*, 1895), "most numerous on the South Coast and its estuaries in winter and spring after storms." Kelsall and Munn (*Birds of Hampshire*, 1905), "a winter visitor to all our coasts, a few pairs remaining to nest." Coward (*Fauna of Cheshire*, 1910), "a winter resident and non-breeding summer resident; met with inland at all seasons." Macpherson (*Fauna of Lakeland*, 1892), "at all seasons a common bird upon our coast-line." But *The Handbook of British Birds* (vol. v, 1941) states that the British Lesser Black-back is a "Summer-resident and passage-migrant . . . a few stay winter most years," and recent county avifaunas take a similar view.

Some variation in the proportion of birds wintering in the British Isles is quite possible, but it is hardly credible that in such a short period there could have been so complete a reversal of the habits of the species as is indicated by the literature. It seems very probable that the article by Dr. A. Landsborough Thomson in *British Birds*, 1924, vol. xviii, p. 34 on "The Migrations of the Herring-Gull and Lesser Black-backed Gull" did much to draw attention to a short mid-winter absence that had previously been overlooked.

More recently it has been shown that the theory of almost complete emigration is either an over-simplification in the other direction or else there has been an increase in the number of resident individuals since about 1930. In 1943 Mr. R. S. R. Fitter recorded the presence of from one to six Lesser Black-backs in the London area each winter since 1929-30, before which there were only three records between December and February (*British Birds*, vol. xxxvi, p. 163), and Mr. W. E. Glegg also remarked on the increase (*Ibis*, vol. 85, p. 92).

In 1945 a paper in *British Birds*, by J. A. G. Barnes (vol. xxxviii, pp. 342-346), based on notes contributed by several observers, showed that fifty or more mid-winter Lesser Black-backs had recently occurred at Morecambe and on the North Wales coast and smaller numbers had been seen in other parts of north-west England with increasing frequency since about 1928.

The announcement of the Enquiry by the Trust brought a good response, and information was contributed by over 120 observers on the first winter, but only by about 70 on the second. Difficulties of health and locomotion in 1950-51 prevented observation in many



MID-WINTER DISTRIBUTION OF LESSER BLACK-BACKED GULLS.
AS REPORTED FOR DECEMBER-JANUARY, 1949-50. SHADING BASED ON THE
SUM OF MAXIMUM SINGLE COUNTS FOR PLACES IN EACH VICE-COUNTY MORE
THAN TEN MILES APART.

cases, and appreciative thanks are offered to all who have collected data for the Enquiry in either winter, sometimes in very uncomfortable conditions.

In an enquiry largely concerned with numbers and distribution it is tempting to record results on maps, but such a method would be misleading in the present instance without detailed explanatory notes. An accurate census of any considerable area is very difficult to make in winter, and single counts may represent either a sedentary population or a party passing through. A single map is included to give a general impression of the distribution of Lesser Black-backs in the more fully reported winter, but it should be remembered that no information was received from large areas of Scotland, Wales and Ireland, and from a few inland vice-counties of England. A more accurate record of the distribution of both gulls and observers is provided by the Regional Survey, which summarizes data received on numbers seen in various parts of the British Isles, classified according to the groups of Watsonian vice-counties. A few occurrences have been recorded by "outside" observers visiting the given locality, but in the great majority of cases the mention of a single date and place implies that no other Lesser Black-backs were seen there in regular observations through the winter.

The following brief summaries of weather conditions in the eight months of the Enquiry are obtained from the Monthly Weather Reports of the Meteorological Office :

November, 1949 : Unsettled, mainly rather mild, especially in the north and north-west.

December : Mainly unsettled and mild, with frequent gales in the west and north.

January, 1950 : Remarkable for a very mild spell in the first half of the month and a really cold spell in the second half.

February : Unsettled and wet ; mild in the south but rather cold in the north.

November, 1950 : Excessive rainfall in England and Wales ; rather cold and sunny on the whole in Scotland and Northern Ireland.

December : Distinguished by extremely low mean temperature and frequent, and, at times, heavy snowfall.

January, 1951 : Rather cold except in the south-east ; unsettled and wet on the whole, with considerable snowfall at times.

February : Unsettled and rather cold, with frequent snow or sleet showers in some places.

SUMMARY OF WINTER DISTRIBUTION, 1949-1951.

Mid-winter Lesser Black-backs have been reported in at least one of the two winters from all the vice-county groups (as shown in the Regional Survey) of England and Wales and from Scotland and Ireland, but in most areas records have been of occasional occurrences or of one or two sedentary individuals. Late migrants

were still passing through in November in both years, but these lingering birds were much more numerous in the north of England than in the south and were generally later in 1949 than in 1950. Return migration in February was noticeable in both years, but in most areas was earlier and on a larger scale in 1951, considerable numbers reaching north Lancashire and Westmorland by February 12th-13th.

One to two dozen birds spent the winter of 1949-50 in the neighbourhood of London, Bristol and Cardiff; in the second winter there was an increase at Bristol and perhaps a similar group near Gloucester, but probably a slight decrease in London. Nottingham was remarkable for the large numbers in November, 1949, but only a few stayed through the winter and there were smaller numbers in November, 1950. On the reservoirs north of Leeds there were also many in November, but, apart from a temporary absence in December, 1950, twenty to thirty remained in January, though numbers dropped sharply in February in both years. There were hundreds near Burnley and Colne in November each year, and thirty or more probably spent the winter in the district. Morecambe had a resident population of well over a hundred birds throughout the first winter, and a decrease of 30-40 in the second may be partly accounted for by an increase at Grange, on the north shore of Morecambe Bay. Ten were seen together in Ayrshire in December-January, 1949-50, and further search might discover regular residents in the Clyde area.

COMPARISON WITH PREVIOUS WINTERS

Information received on this aspect of the Enquiry did not give very much indication of long-term trends. Observers in several areas stated that mid-winter occurrences had been rare or absent in recent years, notably in Dorset, Hertfordshire, East Anglia, West Wales, the West Midlands, south and east Yorkshire, Northumberland, Isle of Man, the Lowlands of Scotland, and Ireland.

However, there is some evidence of recent change in the following localities: in Cornwall Mr. C. J. Stevens had seen large numbers of Lesser Black-backs on Par Beach or the river Fowey for a few days in mid-winter in some of the years between 1940 and 1949, e.g., *c.* 100 on December 29th and 30th, 1944; at least 100 on December 19th, 1945, and *c.* 300 January 20th to 23rd, 1947. It seems possible from the irregularity and short duration of these visitations that they may be due to weather movements from further north. In the London area wintering birds have been recorded each year since Mr. Fitter's note in 1943, and numbers have increased, as is shown by a count of twenty on Hampton filter beds on January 21st, 1948. These larger numbers seem to be associated with an increasing exploitation by the three common species of "big gulls" of the facilities offered by London and its reservoirs for feeding, bathing and roosting. At Nottingham the number of late autumn and winter birds seems to have increased noticeably, and the winter Lesser Black-backs on the Leeds reservoirs have apparently only been

recorded in recent years. On the North Wales coast, however, there has been a marked decline since the period 1940-45, when Mr. T. S. Williams saw numbers up to fifty on the Welsh side of the Dee estuary. Mr. A. W. Boyd has had winter occurrences on the Cheshire fens only since 1928, and in the last few years they have become regular. The large numbers in east Lancashire are a recent development and seem to be connected with offal tipping. On Morecambe Bay numbers have remained fairly steady since 1945, but there is evidence of a large increase over a longer period. The late Mr. H. W. Robinson of Lancaster recorded the winter of 1920-21 as exceptional (*antea*, vol. xiv, p. 236). Between December 2nd and 23rd he saw none of either form, but between December 23rd and January 10th saw "generally pairs and single birds," and on January 11th "six together, of which five were Scandinavian and one British." Much larger numbers than these can now be seen in Lancaster, and still more in Morecambe, every winter.

It thus appears that, excluding the erratic Cornish figures, there has been an increase in six areas, a decrease in one, and no recent change in several others. If the Enquiry could be repeated in ten years' time it should show whether the apparent trend towards an increase in the number of residents is a real one.

COMMENTS ON DISTRIBUTION

A few conclusions may be drawn from the data supplied by the Enquiry.

1. Winter distribution is not primarily governed by climatic conditions. Not only is the winter population in the north of England much larger than in the south, but one of the largest groups, at Laneshawbridge near Colne, is found in an exposed situation on the Pennines at about 800 feet above sea level. The Yorkshire reservoirs are also at a considerable altitude, and the Morecambe beach and promenade frequented by scores of Lesser Black-backs through the winter receive the full force of the north-westerly gales.
2. The majority of mid-winter birds is found within a 45-mile radius of a single large breeding colony in the Pennines. Although the rapid growth of this gullery since its establishment in about 1937 has coincided with the virtual extinction of the colonies on the Kent and Leven estuaries and a probable decrease at Walney, it has almost certainly increased the total Lesser Black-back population of north-west England. Addition of the maximum single counts for each locality in January, 1950, gives a total of 185 inside this 45-mile radius and 105 outside. Of the latter group 38 were seen within 30 miles of the Bristol Channel colonies. The inference that most wintering birds derive from local breeding colonies is confirmed by the only mid-winter ringing recovery in the British Isles of a fully adult Lesser Black-back: ringed at Foulshaw, Westmorland, 26.7.35, recovered Leven Estuary, 10 miles W.S.W., 2.1.48. The

exceptional tameness of the Morecambe birds at all seasons also suggests that some of the same individuals are present throughout the year. At a rough estimate the minimum mid-winter population of Lancashire and Yorkshire might amount to 3 to 5% of the breeding population.

3. Many other large breeding colonies, in Scotland, Ireland, Pembrokeshire and the Scilly Isles, leave very few winter residents or none at all. It may be pointed out that the gulls from the Pennines and Walney, Lancashire, and to some extent those from the Bristol Channel colonies, have excellent opportunities for acquiring scavenging habits during the summer, and it will be shown later that most of the wintering birds feed in or near towns. Birds from the Irish, Welsh, Scilly, and most of the Scottish colonies must be almost entirely dependent on natural foods which would be less easily obtainable in winter. Although Professor Meiklejohn reports that there are many Lesser Black-backs in Glasgow in summer and none in winter it is possible that, as is suggested above, there may be wintering birds in other parts of south-west Scotland.
4. In spite of the severe weather of December, 1950, there was no marked movement of Lesser Black-backs to the south and south-west; but the increase in the Bristol-Gloucester area in that winter and the decrease at Morecambe, Nottingham, and perhaps London, suggests a slight drift in that direction. There are also signs of mid-winter invasions of Cornwall in previous years. There is evidence from Yorkshire that these movements may be connected with the freezing of the inland waters on which the gulls roost and bathe. Lesser Black-backs are much addicted to fresh-water bathing at all seasons, and even the coastal birds would be affected to some extent by the freezing of neighbouring waters.

THE BRITISH AND SCANDINAVIAN RACES.

This is not the place to discuss the validity of subspecific distinctions, but it is a known fact that Lesser Black-backs breeding in northern Scandinavia and Russia have much darker mantles than those breeding in the British Isles. There is, of course, some individual variation, and there are well authenticated records of some birds with darker mantles than the normal British type (*Larus fuscus graellsii*) nesting on the Scillies. Nevertheless a Lesser Black-back with a mantle as dark as that of a Great Black-back (*Larus marinus*) can be assumed to be of Scandinavian origin, and as the winter quarters of the Scandinavian race (*Larus f. fuscus*) are given in *The Handbook* as "E. Mediterranean, Red Sea, and Persian Gulf, and . . . Africa south to the Congo and L. Nyasa," winter occurrences in the British Isles are of some interest.

The great majority of winter birds in all areas were recorded as belonging to the British subspecies, and it is as well to emphasize this, as some bird-watchers and writers seem to have assumed in the

past that Lesser Black-backs seen in this country in the winter were more likely to belong to the northern race. However, a few Scandinavians were recorded, most but not all of them on the eastern side of England: one at Helston, Cornwall, 10.2.51 (A. G. Parsons); 2 at Par 13.2.51 (C. J. Stevens); one at Winchelsea 4.1.50 (A. D. Wilkinson); 11 near Dungeness 6.11.49 (M. L. R. Romer); 4 on the North Kent Marshes 4.11.50 and singles in December (J. F. Burton); one to 3 in London through both winters (K. P. Keywood and others); singles at Nottingham in both winters (S. Allison, J. Staton); one at Northwich 12.11.49 (A. W. Boyd); singles at Blackpool in January, February and November, 1950 (G. A. Bowden); one or two near Leeds in both winters (M. A. Barras-Smith, K. Brown, K. G. Spencer); one near Penrith 9.11.50 (G. A. K. Hervey); 2 near Carlisle 20.11.50 (E. Blezard); 2 on Duddingston Loch, Midlothian 7.12.50 (D. R. Anderson); one at Limerick 24.11.49 (N. H. Wilson).

Dark birds, some of them probably of the "intermediate" form from southern Scandinavia, were recorded singly at Helston 10.2.51; near Cardiff 11.12.49 (B. Campbell); on two or three occasions at Northwich; at Stocks-in-Bowland in the Pennines 24.2.51 (P. E. Davis); at Morecambe 6.11.49 (J. A. G. Barnes); and up to ten in February, 1951, on the Fylde coast, Lancashire (A. F. Airey, G. A. Bowden).

A few other observers reported gulls as "*L. f. fuscus*" without giving any details or evidence of identification.

ADULTS AND IMMATURES

There are two difficulties in determining the exact proportion of immatures to adults in this species. One is that first-winter birds are only distinguishable from dark Herring-Gulls (*L. argentatus*) of the same age in exceptionally favourable circumstances, as there is considerable individual variation of plumage in both species. The other is the close resemblance of fourth-winter, and probably some third-winter, birds to adults. At a distance they can hardly be distinguished, but at closer range the pale bill and "dirty" appearance of the sub-adults mark them as immature, and a careful observer would record them as such.

Even allowing for these difficulties it is clear that in winter adults greatly outnumber immatures in all areas. Occasional occurrences were nearly always of adult birds, and in some localities large flocks were reported as composed entirely of adults. In a few places where resident gulls could be seen at close range some immatures were recorded, the proportion naturally varying in individual counts. The following figures show the total counts of adults and immatures (excluding the first-winter birds mentioned below) made each month by a single observer in four well-separated localities. The London and Lancashire figures are obtained from both winters, the others from 1949-50 only.

	Bristol (R. H. Poulding)			London (K. P. Keywood)		
	Adult	Immature	Percentage Immature	Adult	Immature	Percentage Immature
November ...	54	9	14	27	0	0
December ...	18	2	10	23	2	8
January ...	15	1	6	23	5	18
February ...	58	2	3	35	5	12
	Eccup, Leeds (M. A. Barras-Smith)			Lancaster and Morecambe (J. A. G. Barnes)		
	Adult	Immature	Percentage Immature	Adult	Immature	Percentage Immature
November ...	85	0	0	291	35	11
December ...	53	14	21	200	23	10
January ...	44	13	23	183	10	5
February ...	11	1	8	217	13	6

Most of the immatures appeared to be third- or fourth-winter birds. At Morecambe on November 6th, 1949, five out of a total of 211 Lesser Black-backs were second-winter birds, but there were never more than three in subsequent counts. Mr. S. Allison reported from one to seven first-winter birds near Nottingham in the winter of 1949-50, and at Morecambe there was certainly one on December 26th, 1949, probably four on December 15th, 1950, and a maximum of ten "possibles" on January 7th, 1951.

It is of interest that a bird ringed on the Pennine Gullery by Mr. G. A. Bowden on 23.7.50 was found dead in a fresh condition at Swansea on 26.12.50. Another ringed in the same place three days later and recovered at Baldoyle, Co. Dublin, on 28.12.50 may have been dead for some time. It seems probable that the number of juveniles remaining in the British Isles after the end of October is very small.

HABITAT AND ACTIVITY.

Although occasional Lesser Black-backs were reported from a variety of situations, coastal and inland, the more sedentary residents showed well-marked preferences for certain types of habitat.

Practically all the large counts during the two winters have been made either in or very near towns or on gravel ponds and reservoirs. Inland waters are not only favourite roosting places but are also frequently visited during the day for resting, bathing and preening. Other roosting places reported include estuary mud-banks, ploughed fields, football grounds and gasometer tops (Weston-super-Mare, Miss L. Garrad).

Very few were seen regularly on sandy or rocky beaches, but some were found on estuaries, and docks were frequented at Cardiff, Barry, Bristol and London. At Morecambe the Lesser Black-backs rested on the water, shingle or mud close to the promenade, or on buildings and railings. It was noticeable that very few joined the Herring-Gulls in following the receding tide on to the mud-flats and mussel-beds. Much smaller numbers were seen regularly on other parts of Morecambe Bay near small towns and villages, but rarely on the open sands and uninhabited stretches of shore. Inland the chief resorts were offal and refuse tips (Gloucester, Nottingham, Burnley, Colne, etc.), sewage farms (near London, Bristol, Notting-

ham), filter beds (London), grass fields, especially football grounds (Nottingham, Burnley) and sometimes ploughed fields. Lesser Black-backs are attracted to flood-water with other gulls, and frequent rivers in towns, with a special preference for weirs (Reading, Lancaster, Kendal) and canals (near Gloucester and Manchester).

Although long periods of inactivity are habitual in the large gulls it is surprising how few records have been received of Lesser Black-backs feeding or actively searching for food during the short winter days. The great majority are recorded as "resting," usually on the ground or water, but often also on buildings, railings, posts, boats or buoys. Although it is possible that some of these gulls may have had a watchful eye on some likely source of nourishment it would appear that food must have been found in quantity without active search.

The largest numbers seen feeding have been collecting scraps thrown to them (Morecambe, Lancaster), scavenging at offal or rubbish tips, or feeding in fields, especially at flood times. Smaller numbers have been reported feeding at drain effluents or on sewage farms, following the plough and raiding hen runs for poultry food. On Morecambe Bay the favourite natural food seems to be shore crabs, which the gulls catch by wading or "up-ending" in shallow water or by clumsy plunges from the air. No instances of the dropping of shell-fish were reported, but Mr. S. Allison watched an adult repeatedly dropping an object like a cork on to a frozen gravel-pond from a height of about six feet.

Many Lesser Black-backs have developed considerable ingenuity and audacity in exploiting man-made sources of food at all times of year. In July, 1950, Mr. T. P. Wells saw about thirty of them seizing some unidentified food from a railway wagon in Lancaster goods yard, and the two hundred seen around Crewe station in November, 1949, may have had similar intentions. Potato chips, amputated fowls' heads and legs, numerous egg-shells and a pot egg were found on the Pennine gullery, and young birds on that and another northern gullery vomited quantities of bread and even a large slice of fresh butcher's meat.

ASSOCIATION WITH OTHER GULLS.

Where Lesser Black-backs occurred regularly, either inland or on the coast, they were nearly always accompanied and outnumbered by Herring-Gulls. However, near Nottingham and at Burnley the Lesser Black-backs predominated in the earlier part of both winters, and in the Kent estuary, Westmorland, there were always a few Lesser Black-backs and no Herring-Gulls. Many coastal observers reported large flocks of Herring-Gulls without any Lesser Black-backs. At Morecambe there was a tendency for Lesser Black-backs to separate near the promenade and they sometimes outnumbered Herring-Gulls in one small area.

Black-headed Gulls (*Larus ridibundus*) were very often present with Lesser Black-backs in large numbers at both coastal and inland

roosting and feeding places, but they were not reported from some of the roosts of big gulls on reservoirs. Great Black-backed Gulls generally occurred on the coast and estuaries, often in large numbers in the east and south, and on some reservoirs. Common Gulls (*L. canus*) were much less frequently associated with Lesser Black-backs, but were sometimes seen with them on beaches, inland waters and fields.

It appears that in winter the Lesser Black-back is less marine than either the Herring-Gull or the Great Black-back in its choice of habitat and is more urban than the Common Gull.

PLUMAGE AND COLOUR OF SOFT PARTS.

The *Handbook* states that the Scandinavian subspecies has the "head and neck in winter considerably less streaked" than the British; but even in British adults showing no trace of immaturity the degree of ashy-brown streaking on the head and neck in autumn and winter is extremely variable. In some individuals the whole head and neck look brown at a distance, while in others, even in December and January, the few small flecks are only visible at very close range (E. M. Nicholson, J. A. G. Barnes.). Mr. A. W. Boyd remarks that the wintering birds at Northwich always look shabby, and the great contrast between them and the new immigrants in March is very evident.

In a note on the "Colour of the Feet and Toes of the Lesser Black-backed Gull in the Field" (*Ibis*, 85 : 92 *et seq.*) Mr. W. E. Glegg recorded the foot-colour of apparently adult Lesser Black-backs seen in the Thames Valley in all months from July to April and found a considerable proportion of birds of both British and Scandinavian types with flesh-coloured, white, or green feet. He discusses the possibility of a seasonal recession of colour but concludes that "the most likely explanation of the differences of colour . . . is that the birds, whatever they may appear to be, have not reached maturity."

The Enquiry has thrown some further light on this subject and has shown conclusively that there is a seasonal recession in the leg- and foot-colour of the Lesser Black-backed Gull. Apparent adults with flesh-coloured or whitish legs were reported in one or both winters from several parts of the British Isles; but the best opportunities for observation were provided at Morecambe, where considerable numbers of these gulls could be seen together at close quarters throughout the winter. Even there it was difficult to make an exact classification of colours owing to varying conditions of light and distance of observation, but the following totals of mature birds seen under optimum conditions between November 1st and February 15th were recorded. :

Flesh-coloured ...	...	...	32
Whitish or Greenish ...	...	...	20
Pale yellow ...	...	...	34
Normal yellow ...	...	...	17

Precise accuracy is not claimed for this classification, but it is fair to say that as a "field character" yellow colouring of legs and feet was only visible in half the winter adults in good conditions, and many were observed carefully at a range of less than five yards.

Many of the immigrants in late February and March have legs of rich ochre yellow, and their bills often show a very deep yellow with an almost orange tinge. This deep yellow tint of both legs and bill was lacking in even the most brightly-coloured winter residents, which must acquire it later than the migrants, if at all. Mr. D. G. Sansbury has independently noticed the orange tint in the bills of Lesser Black-backs, and tells me, *in litt.*, that it had faded to a pale yellow in a dead specimen he obtained in the spring.

The seasonal change is erratic in some individuals and apparently an occasional breeding bird never acquires any yellow colouring in the legs and feet, e.g. one with flesh-pink legs at Walney on June 30th, 1950, and two with white legs on July 6th, 1951. On the latter date I found that only about half the breeding birds had legs of the deep ochre colour, the others varying from very pale to a light lemon yellow. However, the seasonal nature of the change is shown not only by the rarity of breeding adults without yellow legs of some shade, but also by the fact that in summer some birds in immature plumage have legs and feet of a pale yellow whereas in winter they are always white or flesh-coloured. The change appears to affect British and Scandinavian races equally, and I have seen adult Scandinavians in Suffolk with very pale, whitish or greenish legs in August and early September. Attention has been drawn recently to a seasonal change in the colour of the soft parts of the Black-headed Gull (*British Birds*, vol. xliii, pp. 408-9).

It is unfortunate that this change of leg colour adds to the difficulty of identifying Lesser Black-backs in winter, as size and build are the only remaining field distinctions between a Great Black-back and a "receded" Scandinavian Lesser.

It should be mentioned that the British Museum skins of winter-killed Lesser Black-backs, all taken abroad, are described as having legs and feet of some shade of yellow. More evidence would be needed to show whether the migrants are affected by this change to a smaller degree or for a shorter period than the residents, but the possibility is suggested by these skins and by the rich colouring of the March immigrants.

REGIONAL SURVEY OF DISTRIBUTION.

PENINSULA (including Bristol and Avonmouth).

1949-50. Mr. A. G. Parsons found single birds in a few places in West Cornwall in November and January, 5 at Helston on January 28th, 11 on Hayle River on February 26th, none on the Scillies December 13th to 16th. One was seen at Par on December 10th, 3 near St. Austell on February 17th. In Devon 6 were recorded at Mothecombe on January 16th, one to 5 near Torquay through the winter and 2 near Sidmouth in January. One to 3 appeared at several places on the south coast in the second half of February. In Somerset from one to 3 were seen through the winter near Taunton and a few each month at Weston-super-Mare, maximum 10 on January 1st. In the Bristol

district, well covered by Mr. R. H. Poulding and others, Lesser Black-backs were present throughout the winter, maximum single counts in each month being 14 on November 18th, 9 on December 30th, 13 on January 29th and February 21st.

1950-51. None seen in West Cornwall from November 1st until February 10th, when 16 immigrants appeared at Helston. There were 3 at Par on January 17th, 13 on February 13th. Apart from an injured bird in November none seen on the Exe estuary until February : one on the 4th, 8 on the 18th. Counts in the Bristol district were generally higher than in the previous winter, e.g. 29 on November 1st, 35 on December 3rd, 12 on January 21st, 16 on February 8th, 26 on the 12th, 35 on the 28th.

(R. G. Adams, B. J. Bailey, J. A. R. Bickford, A. E. Billett, P. J. Chadwick, G. E. Clothier, Devon Bird-Watching and Preservation Society *per* E. H. Ware, Miss L. Garrad, P. Gray, H. G. Hurrell, B. King, A. G. Parsons, R. H. Poulding, J. Shipman, C. J. Stevens, J. J. Walling, M. J. Wotton, A. J. Yeatman.)

CHANNEL.

1949-50. Negative reports from Dorset. Three near Lymington, Hampshire, on November 4th, one near Southampton on January 11th. Single birds at Shoreham, Sussex, on several days in November and December, 3 on February 12th and 14th ; 2 or 3 near Newhaven on December 10th, 2 at Winchelsea on November 25th and 26th, one on January 4th.

1950-51. One near Swindon, Wilts, on February 23rd. Two or more seen in Portsmouth Harbour in February were believed to have wintered there. Negative reports from Chichester and Rye.

(Mrs. R. G. Barnes, W. R. P. Bourne, E. Cohen, E. Giles, G. C. Hodgson, K. B. Rooke, J. Stafford, J. R. M. Tennent, A. D. Wilkinson, H. E. Woods.)

THAMES.

1949-50. Twelve near Dungeness on November 6th ; one near Halstead, Essex, in January. In London the maximum single counts reported for each month were : 11 on November 28th, 9 on December 30th and January 13th, 10 on February 16th. None recorded at Tring; 2 at West Hyde. One or two spent the winter at Reading and 7 were seen on December 11th ; single birds at Oxford on three days in November, December 1st and February 21st-24th.

1950-51. Four on the North Kent marshes on November 4th and singles on two days in December. A few late migrants near Romford in November, e.g. 9 on 9th ; 2 on 16th and 23rd, but none later. Some again wintered in London, maximum counts being 6 to 8 on December 23rd, "several" on January 27th, 7 on February 13th. In both winters two or three were reported from many points in the London area, and the total population is difficult to estimate. One was seen at Tring on November 27th, one near Watford on December 23rd, and 4 at Hamper Mill on December 27th. Four flew S.W. over Wootton, near Woodstock, on December 27th, and one appeared at Oxford on February 19th.

(H. A. Bilby, B. Campbell, S. Cramp, C. E. Douglas, A. C. Frost, H. H. S. Hayward, J. N. Hobbs, P. A. D. Hollom, K. P. Keywood, W. I. St. G. Light, London N.H.S., *per* C. B. Ashby and R. W. Hayman, J. M. McMeeking, E. M. Nicholson, J. R. Pendle, Mrs. M. Radford, M. L. R. Romer, W. G. Teagle, R. B. Warren.)

ANGLIA.

1949-50. Singles on the River Stour on January 8th and at Felixstowe on January 21st, 17 near Bury St. Edmunds on February 25th. Negative reports from Blakeney and Wells. Three were seen flying over the Wash near King's Lynn on December 3rd, 2 on 7th, one on 8th. One at Cambridge on January 7th, 3 on February 25th.

1950-51. Two near Bury St. Edmunds on January 21st ; 3 at Walberswick on November 11th ; one at Southwold on December 25th. One oiled immature on Breydon Water on November 4th ; 3 on the Wash December 8th ; one at Cambridge on December 9th.

(G. B. G. Benson, W. R. P. Bourne, A. L. Bull, Miss J. M. Ferrier, R. H. Harrison, M. Packard, P. R. Westall.)

SEVERN.

1949-50. A small number apparently wintered near the head of the Severn estuary: 5 at Sharpness on November 12th, one at Slimbridge on January 15th, 3 near Cheltenham on November 13th and December 18th and one on January 28th. One on Chadbury Weir on February 8th, several at Worcester on the 17th, one at Frankley on the 26th. Seven on Aqualate Mere, Staffordshire, on November 13th and one at Bellfields on February 27th, but negative reports from other waters in this area.

1950-51. Numbers were larger than in the previous winter in the south: at Gloucester 6 on November 15th, 4 on December 16th, 12+ on January 12th, 2 on February 6th; at Frampton, Severn estuary, 6 on December 21st, 4 on January 2nd; one at Slimbridge on December 13th; 3 near Cheltenham on February 14th. Two at Bewdley on December 20th. One flew N.W. over Alvecote Pools, Warwickshire, on January 21st. One at Bellfields on November 5th.

(W. B. Alexander, G. A. Arnold, M. A. Arnold, B. Campbell, P. Evans, L. W. Hayward, Mrs. M. J. Morgan, West Midland Bird Club *per* C. A. Norris.)

SOUTH WALES.

1949-50. A few were seen regularly in the Cardiff-Penarth-Barry district, e.g. 3 on November 12th, 6 on December 30th, 12 on January 8th, 4 on February 26th. In spite of the large local breeding colonies the only Pembrokeshire records were 2 near Dale on November 20th, one on December 25th, 2 on January 2nd, with an influx in February, 6 on the 5th, 17 on the 19th. None at Aberystwyth through the winter.

1950-51. Unfortunately no observations from Cardiff, but 2 were seen at Barry on January 7th and February 4th. In Pembrokeshire one or two were seen through the winter, with a slight increase in February, e.g. 2 at Haverfordwest on November 4th, January 27th, February 3rd, 5 on February 24th; 2 at Dale on December 31st and February 12th, 6 on February 14th.

(J. H. Barrett, B. Campbell, T. A. W. Davis, D. G. Sansbury, J. D. R. Vernon.)

NORTH WALES.

1949-50. On the Welsh side of the Dee estuary Mr. T. S. Williams noted 10 on November 7th, about 6 on December 2nd and a few on December 28th, but on several journeys along this coast in January and February he saw none. Two on the Menai Straits on January 12th, but reports from Holyhead and Anglesey were negative. A January search of the Conway valley and parts of Caernarvonshire by Mr. J. C. S. Ellis was also negative.

(J. C. S. Ellis, C. P. Rawcliffe, E. P. Watkins, T. S. Williams.)

TRENT.

1949-50. Single birds at Gibraltar Point, Lincolnshire, on November 6th and January 5th; 7 near Brigg on December 13th; negative report from Cranwell. Large numbers were seen in the Nottingham district in November and some stayed through the winter. The following were outstanding single-day totals by various observers: c. 300 on November 10th, 105 on the 27th, 80 on December 1st, 16 on the 11th, 12 on the 31st, 8 on January 1st, 37 on February 2nd, 17 on the 12th. There were 17 at Sawley, Leicestershire, on November 4th, dwindling to one on the 30th.

1950-51. A few were recorded at Sutton-on-Sea in November, December and February but none in January; monthly maxima: 5 on November 5th, 4 on December 9th and February 25th. There was a negative return for Derby and district. At Nottingham numbers were much reduced: maxima 20 on November 23rd, one on December 31st.

(S. Allison, H. Barlow, R. Brook, P. W. P. Browne, E. A. Chapman, A. Dobbs, T. A. M. Hill, D. C. Hulme, N. Johtund, A. H. Jones, Lincolnshire Naturalists' Trust *per* L. Ottaway, Miss H. Mann, J. M. McMeeking, J. Staton.)

MERSEY.

1949-50. On Witton Flashes near Northwich Mr. A. W. Boyd saw a few through the winter, e.g. 17 on November 4th, 3 on December 24th, two or three on January 8th, 4 on February 28th. About 200 were reported at Crewe one day in November; only occasional birds on the Wirral coasts, maximum 5 at Heswall on December 25th. One or two spent the winter by the Manchester Ship Canal near Partington and Lymm. At St. Annes 4 were seen for some days in December, occasional singles in other months. Blackpool shore was searched daily by Mr. G. A. Bowden, who recorded Lesser Black-backs on 9 days in November, maximum 8 on the 3rd, singles on one day in December, 3 days in January and 7 in February; 3 appeared on February 27th, 10 on the 28th. In East Lancashire Mr. K. G. Spencer recorded many in November and several remained through the winter, e.g. at Burnley 28 on November 12th, 16 on December 4th, 17 on January 15th, 6 on February 5th; at Laneshawbridge, near Colne, 253 on November 7th, c. 90 on the 27th, 8 on December 21st, 9 on January 14th, 5 to 9 on February 12th. At Morecambe and Lancaster numbers were even larger, and after the late migrants had left in November the genuine residents were much more numerous than anywhere else in the British Isles; e.g. 327 on November 6th, 148 on the 22nd, 100 on December 21st, 112 on January 7th, 75 on February 3rd, 102 (± 10) on the 21st.

1950-51. Again a few frequently recorded on Witton Flashes, monthly maxima: 11 on November 2nd, 3 on December 9th, 2 on January 23rd, 3 on February 18th. Negative report from Wirral, but single birds were seen near Thornton-le-Moors and Frodsham on December 31st; one or two on the Ship Canal in November and February but none between December 2nd and January 31st; one at Sale on November 19th, 13 at Ainsdale on November 13th. Single birds at Lytham early in February, and 7 on the 23rd, 10 on the 25th. Mr. Bowden found one or two on Blackpool beach on 16 days in November, maximum 7 on the 3rd, and singles on one day in December, 3 days in January and 2 in February. Mr. Spencer again saw many near Burnley in early November, maximum 48 on the 11th, but numbers dwindled during the month and the last seen were 3 on December 2nd. He and Mr. J. Webster found large numbers at Laneshawbridge, e.g. c. 190 on November 18th, 93 on 26th, c. 96 on December 3rd, 26 on 10th, 28 on January 28th, 29 on February 11th, 88+ on the 25th. At Morecambe mid-winter numbers were rather lower than the previous year but still considerable, e.g. 100 (± 10) on November 30th, 79 (± 5) on December 15th, 63 (± 2) on 28th, 78-80 on January 11th, 63 on February 1st, 116 on the 12th, 170 on the 22nd. The marked increase in mid-February indicates very early immigration.

(A. F. Airey, W. B. Alexander, J. A. G. Barnes, G. A. Bowden, A. W. Boyd, B. Campbell, D. G. Cotgrave, R. M. Garnett, N. Harwood, Miss M. Henderson, W. T. C. Rankin, J. P. Savidge, K. G. Spencer, A. R. Sumerfield, J. Webster, T. P. Wells.)

HUMBER.

1949-50. Considerable numbers were seen near Leeds in November and some stayed through the winter: e.g., 89 at Beeston on November 13th, 45+ at Eccup on November 23rd, 27 on December 20th and January 21st, 5 on February 9th. 7 on Malham Tarn on November 23rd, 2 on December 2nd; single birds in December at Cawthorne, Settle, Ripley and near York, and in January at Brighouse. Negative reports from other parts of Yorkshire.

1950-51. Many again in November on reservoirs north and north-west of Leeds, e.g. 100+ at Eccup on November 8th; c. 60 at Eccup, 12 at Lindley, 15 at Fewston, 110 at Swinsty on the 19th; c. 5 at Eccup on December 12th; 20 (± 3) at Swinsty on January 7th; 5 at Eccup, 19 at Swinsty, one at Gouthwaite on the 14th; only singles in February. The drop in numbers in December may be attributed to the freezing of the reservoirs: Mr. P. E. Davis noted a movement of gulls up the Aire valley in mid-December. A negative report from the Calder valley.

(M. A. Barras-Smith, K. Brown, P. E. Davis, J. C. S. Ellis, W. F. Fearnley, P. F. Holmes, M. F. M. Meiklejohn, K. G. Spencer, A. F. G. Walker.)

TYNE.

1949-50. Single birds were seen in the Newcastle-Sunderland district on four days in November, 2 on November 25th, and one on January 25th.

1950-51. One at Low Gosforth on November 5th is the only record.

(C. J. Gent, D. C. Hulme, H. Tully.)

LAKES.

1949-50. Some wintered on the Westmorland and Furness shores of Morecambe Bay, e.g., on the Kent estuary 22 on November 14th, 4 on December 8th and 31st, 8 on January 1st, 4 on February 19th. Immigration was shown with a count of 57 on February 27th. At Grange 10 were seen on November 12th and 3 or 4 stayed through the winter; 15 near Barrow on December 26th, and 33 were counted from the railway between Ulverston and Seaseale on November 5th. Inland one, occasionally two, were seen fairly regularly in Kendal and at the head of Lake Windermere. Two near Appleby on November 15th and 16th, one on December 27th, 2 on January 23rd; one over Lake Coniston on February 18th. One regularly near Penrith till November 24th; one at Carlisle on February 11th. None seen in the Isle of Man.

1950-51. On the Kent estuary 23 on November 23rd, one or two through December, up to 6 in January, and a definite increase in February; 17 on the 13th, 22 on the 20th, 67 on the 27th. At Grange Mr. H. B. Turney saw 100 on November 7th and 9th, 12 on December 16th and 20 on the 23rd, and about a dozen in January and February. There were 5 on the Duddon estuary on November 4th; one or two at Kendal in November and January. 5 on February 13th; single birds on Windermere and Wastwater in November; one near Appleby on January 28th-29th. One near Penrith on November 7th and 9th and December 11th; 2 near Carlisle on November 20th. Negative reports from the Isle of Man.

(J. A. G. Barnes, Mrs. M. F. Bell, E. Blezard, L. A. Cowcill, W. S. Cowin, Miss M. Gladding, G. A. K. Hervey, E. B. Hughes, R. W. Robson, K. G. Spencer, H. B. Turney.)

SCOTLAND.

1949-50. Reports from Berwickshire, Clyde, Forth, Inverness and Argyll were negative, with the following exceptions: 3 at Dumfries on February 10th; 10 at Galston, Ayrshire, December 26th to January 8th; 8 on the Tynninghame estuary on November 1st, one at Edrom, Berwickshire, on December 26th and one at Coldingham on the 30th; one at Linlithgow Loch on February 12th, one at Edinburgh on February 16th; 15 at Seourie, Sutherland, November 21st-24th.

1950-51. Negative reports from Berwickshire and the Edinburgh district, except for Duddingston Loch, Midlothian, where single birds were seen on three days in November, 3 on November 22nd, 2 on December 7th.

(D. R. Anderson, A. H. Gray, G. Hughes-Onslow, J. E. King, Mrs. C. Knowles, W. M. Logan Home, J. D. Lockie, M. F. M. Meiklejohn, G. W. Sandeman, I. F. Stewart, Lord David Stuart, F. D. C. Walls.)

IRELAND.

1949-50. Reports from County Cork, Limerick, Dublin, Galway and Mayo were negative, with the following exceptions: 3 at Limerick on November 3rd, and one on November 23rd-24th, December 26th, January 13th and February 4th; one at Arklow, County Wicklow, on January 26th; one at Dublin on January 5th and 28th; one at Galway on November 28th.

1950-51. One at Claddagh, County Galway, on December 16th; a "dull and listless" bird near Dublin from mid October to early January; and one near the mouth of the Liffey on February 3rd and from the 17th to the end of the month. Negative reports from County Mayo.

(Mrs. Z. Hall, J. E. O'Donovan, B. O'Regan, R. F. Rutledge, J. F. Simms, N. H. Wilson.)

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XXXV. THE LONG-TAILED SKUA.

Photographed by R. CHISLETT and P. O. SWANBERG.

(Plates I-8).

THE present series of plates shows very well the handsome and striking plumage of the adult Long-tailed Skua (*Stercorarius longicaudus*). In addition to the great length and flexibility of the central tail-feathers, the plates bring out some of the other distinctive features, such as the uniform pale under-parts, the dark under-side of the wing and the clear-cut dark cap contrasting markedly with the upper-parts. Some of the flight pictures, notably Plate 3, illustrate the point made in *The Handbook* that this is the "most graceful and easy flier of the three smaller skuas, with action more floating and tern-like than Arctic Skua." Rankin and Duffey (*antea*, vol. xli, spec. sup., pp. 36-37) record that as a general rule this species afforded only distant views at sea, but that it "always appeared a slenderer bird with a buoyant flight, becoming, as it were, tern-like." The same authors, in their Atlantic crossings recorded, "11 certain and 6 indeterminate birds between the end of July and mid-August. All these mid-ocean records occurred between 30°W. and 45°W." This gives some indication of the westerly nature of the autumn migration which takes the bulk of the Long-tailed Skuas far to the west of the British Isles. The birds observed in this country are not infrequently juveniles in much less distinctive plumage than that shown in the plates and represent just the fringe of the main movement. A search of such recent local reports as are available suggests that in recent years the Long-tailed Skua has been very scarce. A full description of one at Minehead, Somerset, in May, 1947, has been published in our pages (*antea*, vol. xl, pp. 286-287); apart from this we have come across only the following autumn records: One, Devon, October, 1949; one, Lincolnshire, November, 1949; one, Yorkshire, autumn, 1950, both the latter having been picked up dead. One might have expected that the violent westerly weather of September, 1950, would have brought in some of these skuas from the Atlantic, but we have not found evidence that this was the case.

HEAD FLAGGING IN THE BLACK-HEADED GULL; ITS FUNCTION AND ORIGIN.

BY

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STUDIES of the reproductive behaviour of various birds and fish have led to the conclusion that many elements of courtship, threat, and other types of display are "derived" movements. Some of these, such as the pecking gestures by which a Domestic Cock calls the hens to food, or the "strutting" postures of courting gallinaceous birds, have doubtless originated as intention movements; that is, incomplete movements caused by low motivation (Daanje, 1951) or, if the motivation is relatively high, by partly inhibited motivation. Other movements are combinations of intention movements of different drives; they are the outcome of low ambivalent motivation. Such is the upright threat posture of the Herring-Gull (*Larus argentatus*), for example; a combination of the intention movements of attack and withdrawal (Tinbergen, 1952). A third group of derived movements includes displacement activities, due to a strong but thwarted motivation. Thus the "grass-pulling" of the Herring-Gull is actually displacement collecting of nest material, due to strong activation of both the attack drive and the escape drive (Tinbergen, 1952).

Such movements, however, often show certain characteristic differences when compared with the original movements from which they are derived. In many cases these differences are caused by ritualization; a secondary evolutionary adaptation to the signal function of the activity. Ritualization tends to make the movement more conspicuous. This may be effected by simplification and exaggeration of the movement itself (Daanje, 1951), or by the use of conspicuously coloured structures which are displayed in the movement, or by both. For instance, the strutting movements of gallinaceous birds are supported by the spreading of beautifully coloured fans, formed by tail, tail-coverts, or wings. The threat movements of Coots (*Fulica atra*) demonstrate the white frontal plate. The displacement preening of courting ducks is made more conspicuous by the use of brightly coloured parts of the wings (Lorenz, 1941), etc. So many similar examples are known that an observer of courting or fighting birds expects their "ceremonies" to display the conspicuous parts of the plumage.

During our recent field studies of the reproductive behaviour of the Black-headed Gull (*Larus ridibundus*) we paid particular attention to one specific courtship movement: the Head Flagging. This, like the examples cited above, seems to be a derived movement. Unlike theirs, its ultimate derivation is obscure, as it could have originated either as an intention movement or a displacement activity, or perhaps even as something else. Whatever the original

movement may once have been, it is now thoroughly ritualized in connexion with its function. It is precisely in this function that the interest and significance of the Head Flagging lies : it seems to negate or nullify a different and entirely distinct behaviour pattern : the Forward Display. It seems, therefore, obvious that the evolution of Head Flagging has been dependent on the evolution of the pattern it serves to nullify. We believe that such a clear and complete case of evolutionary dependence of one distinct behaviour pattern on an entirely different pattern has not previously been described. Perhaps the above might be more easily understood if we describe the courtship of the Black-headed Gull in a little more detail.

Contrary to reports in the literature (Kirkman, 1937 ; Lack, 1940) we found that not all members of a breeding colony of Black-headed Gulls are mated when they arrive in spring. Pair formation takes place in or near the colony, on " pre-territories " taken up by single males. These are visited by single females ; such visits eventually lead to pair formation. After the pair has been formed, the pre-territory is abandoned and the pair select a nesting territory together.

When male and female meet, either before pair formation or after they have become mutually attached, they go through various courtship movements. The male, standing in his pre-territory, first reacts to an approaching flying bird of either sex by uttering a loud long call (Plate 10, upper). We may provisionally write this as " kreeooo." We consider it an expression of aggressiveness, with threat function, as it is often uttered in obviously aggressive situations, such as fights between neighbouring males. Moreover, intruding males are strongly repelled by it. When the approaching bird alights (which only females do) both birds adopt the Forward Display attitude (Kirkman). Since this posture is even more common during hostile encounters between neighbours than in encounters of (prospective) mates, we consider it a threat posture. This is also indicated by the form of the display itself : the bill is pointed forward, suggesting preparedness to fight (Plate 9, upper and lower ; Plate 10, lower). As an element of the behaviour of sex partners it is commonest in the beginning of the season, although it may also occur later. We believe that it indicates a certain degree of hostility towards the sex partner. Hostile behaviour in similar situations has been reported in several other birds (Heron (*Ardea cinerea*), Verwey, 1930 ; Snow-Bunting (*Plectrophenax nivalis*), Tinbergen, 1939) and in fish (Cichlids, Baerends and Baerends, 1949 ; Three-spined Stickleback, Van Iersel and Tinbergen, unpubl.). After the Forward Display, both birds usually adopt another attitude which is, in several respects, the exact opposite of it. They stretch the neck vertically upward, and, with a sudden movement, jerk the head to the side, pointing the bill away from the partner when they do so (Plate 11). The neck



LONG-TAILED SKUA (*Stercorarius longicaudus*).

UPPER : NEST AND EGGS.

LOWER : NESTLING.

SWEDISH LAPLAND.

(Photographed by P. O. SWANBERG).



LONG-TAILED SKUA (*Stercorarius longicaudus*) IN FLIGHT. SWEDISH LAPLAND.
(Photographed by P. O. SWANBERG).





LONG-TAILED SKUAS (*Stercorarius longicaudus*) IN FLIGHT. SWEDISH LAPLAND.
(Photographed by P. O. SWANBERG).



LONG-TAILED SKUA (*Stercorarius longicaudus*) ON BREEDING GROUND.

SWEDISH LAPLAND.

(Photographed by P. O. SWANBERG).





LONG-TAILED SKUA (*Stercorarius longicaudus*) ALIGHTING AT NEST.

SWEDISH LAPLAND.

(Photographed by R. CHISLETT).



LONG-TAILED SKUA (*Stercorarius longicaudus*) SITTING. SWEDISH LAPLAND.
(Photographed by R. CHISLETT).





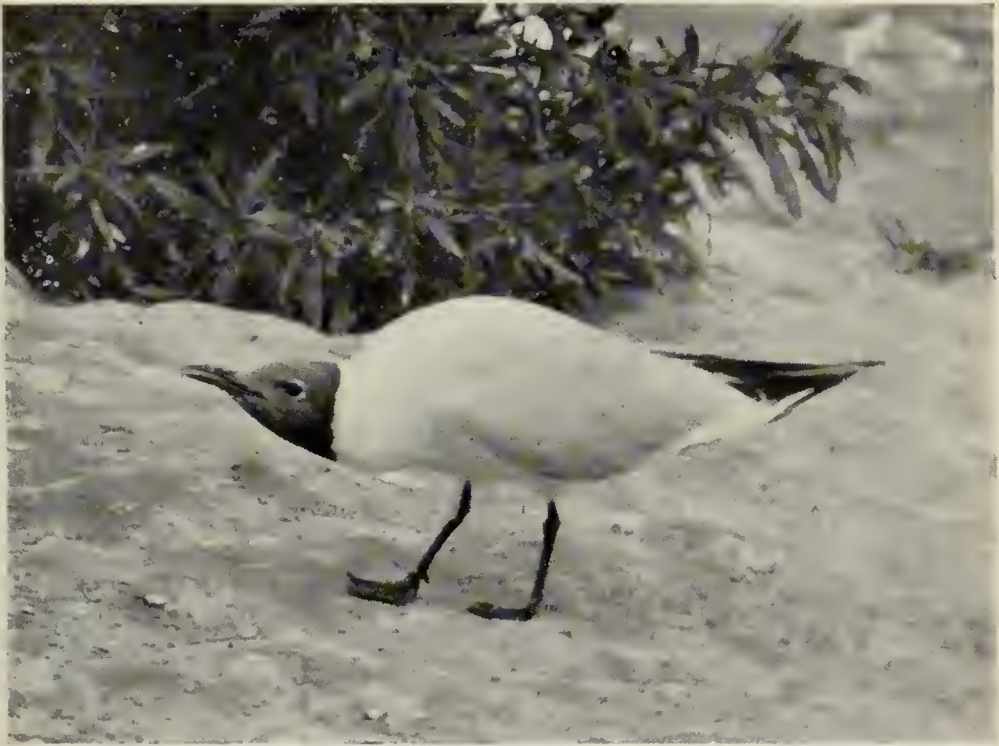
LONG-TAILED SKUA (*Stercorarius longicaudus*) AT NEST. SWEDISH LAPLAND.

(Photographed by R. CHISLETT).



LONG-TAILED SKUA (*Stercorarius longicaudus*) WITH CHICK.
SWEDISH LAPLAND.

(Photographed by R. CHISLETT).



BLACK-HEADED GULL (*Larus ridibundus*).

UPPER : FORWARD DISPLAY. SCHOUWEN, HOLLAND, 1926.

LOWER: MUTUAL FORWARD DISPLAY IN AN AGGRESSIVE ENCOUNTER BETWEEN NEIGHBOURING MALES. SCHOUWEN, HOLLAND, 1926.

(Photographed by N. TINBERGEN).



BLACK-HEADED GULL (*Larus ridibundus*).

UPPER : THE TRUMPETING CALL, UTTERED BY A MALE ; FEMALE (RIGHT) ABOUT TO SETTLE ON NEST. TENEL, 1928.

LOWER : FORWARD DISPLAY AS SEEN BY OPPONENT. SCOLT HEAD ISLAND, 1951.

(Photographed by N. TINBERGEN).



BLACK-HEADED GULL (*Larus ridibundus*).
HEAD FLAGGING BY PAIR AT NEST RELIEF. (THE EGG MODELS IN THE CENTRE
ARE LYING ON THE NEST RIM TO TEST THE EGG-ROLLING RESPONSE.)

SCOLT HEAD ISLAND, 1951.
(Photographed by N. TINBERGEN).



TEREK SANDPIPER (*Xenus cinereus*).
ADULT CAUGHT AND RINGED AT OTTENBY, SWEDEN, JULY 22nd, 1950.
(Photograph lent by S. ULESTRAND).
(see p. 36).



feathers are ruffled at this time, making the neck appear very thick. A similar movement has been observed by Noble and Wurm (1943) in the Laughing Gull (*Larus atricilla*); they named it "Head Flagging." Kirkman mentions the movement in passing, as an occasional sequel to the "upward display." We are convinced that he includes more than one posture under the term "upward display," and that he failed to recognise the importance of Head Flagging because he appears to have missed the pair-forming ceremonies entirely. Unlike the Forward Display, Head Flagging is never seen during hostile encounters. It is done exclusively by partners or prospective partners.

As it is known that many displays which are oriented to another individual serve to demonstrate conspicuously coloured structures, we naturally wondered whether the Head Flagging made a gull more conspicuous to its partner. We soon realised, however, that a head-flagging bird shows nothing but the white neck to the partner. This can hardly be considered a very conspicuous feature in a predominantly white bird like the Black-headed Gull. At the same time we noticed that the Head Flagging, in complete form, usually had the effect of concealing the brown face from the partner. This concealment of a conspicuous feature gave us a clue in our attempt to understand the function of Head Flagging. In the Forward Display, the birds direct their bill more or less toward the opponent. This orientation is not perfect; a bird may even stand at right angles to another bird, but it very rarely faces away from it. The threat function of the Forward Display, undoubtedly based originally on the aiming of the bill, is enhanced by the brown face. It seems very probable that the latter has evolved primarily to emphasise the threat gesture. In this connexion it might be significant that Huxley and Fisher (1940) found that attacks of Black-headed Gulls on stuffed gulls are directed at the head or nape.

We are, therefore, led to suppose that Head Flagging has evolved as a friendly gesture because it is the opposite, or negative, of the threat movement. It means something like "no offence meant."

Other types of "display" may have evolved in rather similar manner. A male Coot, for instance, threatens other Coots by facing them with the head pointing forward and downward. This movement displays the white frontal plate (which is larger in males than in females, and is largest in spring). The Coot also has a friendly gesture; it bends the head down to such an extent that the front is parallel to, and almost touching, the water's surface. This movement does not display any conspicuous structure; rather it serves to hide the conspicuous bill and white frontal plate. Again it seems plausible to consider the threat gesture as the "primary" movement, and the other as a "secondary" movement, developed to offset the effects of the threat.

It seems to us that the many "inferiority gestures" in which, as Lorenz has repeatedly emphasized, the occiput is turned towards

the opponent, may not be a "demonstration of a vulnerable spot" inhibiting attack (Lorenz). Their effect would seem to be due instead to the fact that the main weapon (the bill, or in mammals such as the Dog, the teeth), and also such structural releasers as support the demonstration of the weapon, are turned away.

SUMMARY.

The Head Flagging of the Black-headed Gull, and probably also other gestures of appeasement in different species, seem to have the function of nullifying the effect of threatening gestures and structures. Whatever the origin of such appeasing movements may have been, ritualization seems to have followed the opposite course from that which it usually does. In such cases conspicuous structures are concealed rather than displayed. Therefore, the process of ritualization of these movements has been dictated by the concomitant ritualization of their opposites, the threat movements.

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THE STATUS OF THE BLACK-HEADED GULL COLONY AT RAVENGLASS.

BY

S. MARCHANT.

ALTHOUGH there is an interesting association of several species of sea and shore birds breeding on the Drigg sandhills opposite Raven-glass in large numbers, the site has received little serious study and is generally known only for the size of the colony of Black-headed

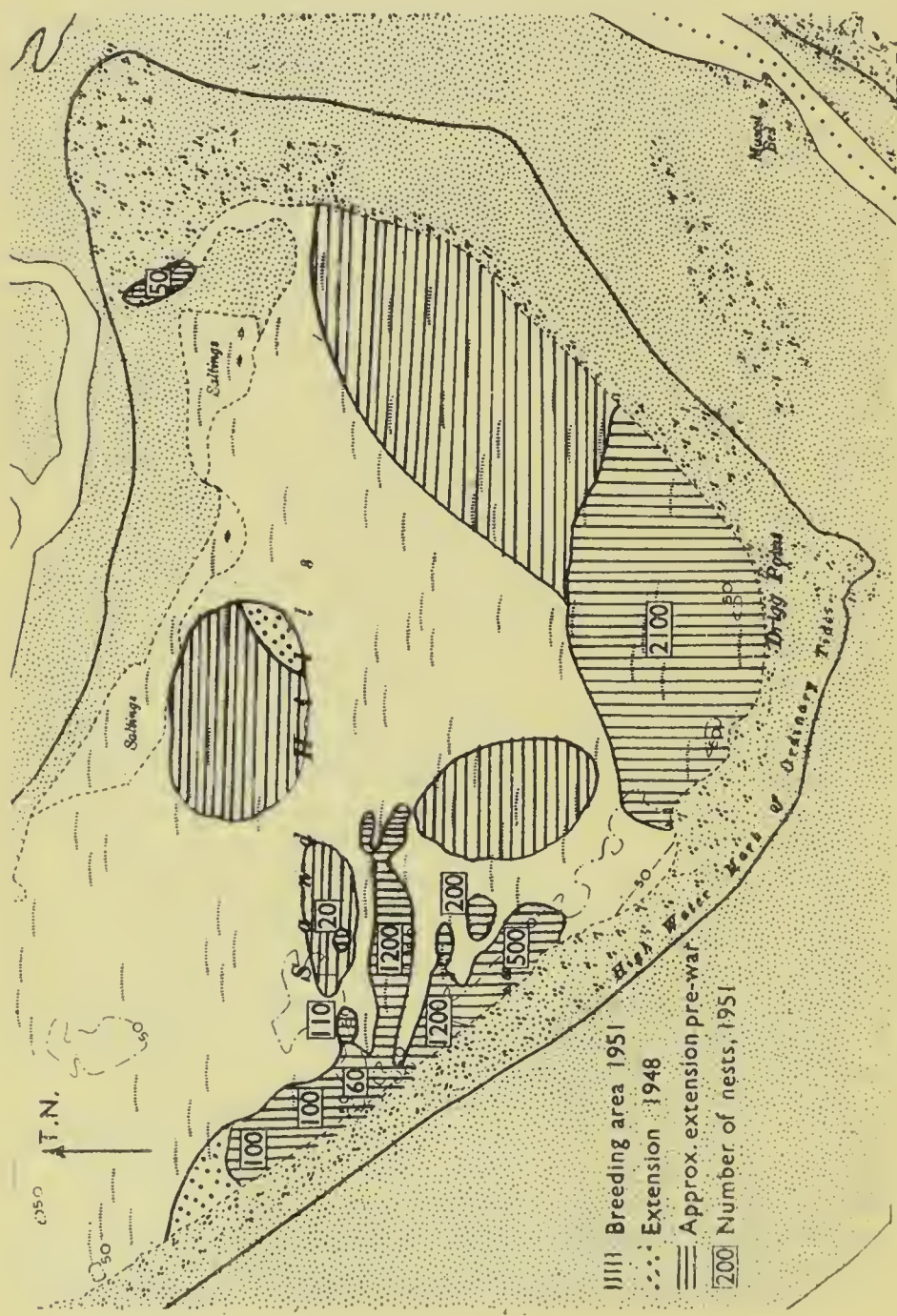
Gulls (*Larus ridibundus*) and for the yearly presence of Sandwich Terns (*Sterna sandvicensis*) in somewhat fluctuating numbers. When in England during the summer of 1948, the writer noticed an obvious decrease in numbers of Black-headed Gulls and immediately realised that it was possible to make a more accurate estimate of the size of the colony than was done in 1938. The interpretation of the results of observations in 1948 was open to some doubt, and in consequence a more detailed check was made in 1951.

The present writer was responsible for the figures for the Ravensglass colony supplied for the Survey of Black-headed Gull colonies carried out by the British Trust for Ornithology in 1938. In his report on that survey (*antea*, vol. xxxiii, pp. 202-221, 230-244) Hollom described the colony as by far the greatest in the Kingdom, over five times the size of its nearest rival, and amounting to two-thirds of the total breeding population of Black-headed Gulls in England. The more important details given were that the birds bred over an area of about $\frac{3}{4}$ square mile and that "in 1938 (there were) some tens of thousands breeding pairs, probably less than 50,000," figures which were based on the present writer's submission. It will be shown that at the present time the size of the colony is far smaller, the difference being so great that, together with what evidence can now be collected for pre-war numbers, it must indicate that the 1938 estimate was much exaggerated. At the same time there is clear evidence for some natural decrease.

It is not necessary to discuss the results of observations made in 1948, though they will be mentioned later, since they show that a decrease has occurred since the war. The accompanying map shows the breeding area of the gulls as measured in 1951, when the writer visited the colony on June 24th and 25th. These areas were mapped as carefully as possible by rather primitive pacing and compass methods: though they are not thought to be absolutely precise, they are probably quite reasonably accurate. As far as possible all nests were counted directly, and, though naturally the final figures are not exact, they are probably on the generous side since they include all nests which showed signs of occupation this year, whether they contained eggs or young or were empty: finally the figures were rounded off upwards. The numbers on the map against each more or less easily separable area show the nests counted and their total is 5,640. If then we say that no more than 6,000 pairs bred at Ravensglass in 1951, we cannot, it is thought, be making an underestimate.

In 1948 the birds bred over a slightly larger area than this year. The extension is shown on the map. It is not likely that there were more than an extra 500 pairs in that year. The map also indicates roughly those areas where the gulls used to nest before the war: it is now impossible to be exact on this point, partly because of lack of records and partly because the topography of the sandhills changes somewhat in the course of time, obliterates landmarks and

makes it difficult to be precise as to localities. Nevertheless the areas indicated are not wildly inaccurate. Measured as generously as possible they comprise approximately 400,000 square yards. This is a very different figure from the $\frac{3}{4}$ square mile implied in 1938, though in the broadest sense it is not far out to say that the birds did nest "over" that area. Now, this year (1951) it is possible to estimate the breeding density fairly accurately. There were five to



six thousand breeding pairs in an area of approximately 200,000 square yards, i.e., one pair per 35-40 sq. yds. Incidentally in 1948 a sample count in an area of 100×150 yards showed 150 nests or one pair per 100 sq. yds., but that was a selected area which included some bare sand, a factor which has been excluded as far as possible in the 1951 figures. In both years the density in the breeding patches seemed to be much the same as before the war. On this basis, then, say one pair to 40 sq. yds., we could expect a population of just about 10,000 pairs in pre-war years. Certainly it would be wrong to suggest a figure anyway nearly approaching 50,000, and, even by putting the most liberal interpretation on the estimates of area and density made above, it would be hard to reach a figure of 20,000.

The writer's opinion is that 10,000 pairs is a very fair estimate of the pre-war population and there is support for this from two independent sources. The semi-permanent watcher at Ravenglass who has been associated with the gullery for 30 years or more, considers that, though undoubtedly some decrease has occurred, as is obvious from the decrease of the breeding area, this is nothing like of the order of ten times; but that on the contrary it is remarkable that the gulls have been able to maintain their numbers so well, in spite of bombing and shelling during the war, when the sandhills were used to some extent as a practice area, and also in spite of a general falling-off in protection leading to more intensive and excessive egg-collecting. Moreover the records of eggs collected by the Muncaster Estate over the last 20 years are instructive. These show very great fluctuations, but in an average year before the war almost exactly the same number was collected as in the past two or three years. The pre-war fluctuations can best be attributed to outside factors such as bad weather or inability to collect systematically. The average figure is between 20-25,000 eggs, and as this year that amount was collected from about 6,000 pairs, it is hardly likely that before the war it came from a much larger number, since the collecting methods have not been appreciably intensified.

I am obliged to Mr. E. M. Nicholson for pointing out that a further check on numbers both before and after the war is possible. In particular by considering the year 1941 when an especial effort was made by the Muncaster Estate to collect as many eggs as possible, a more reliable figure for early war-year, and so, perhaps, pre-war, numbers might be found. If we knew, or could reasonably estimate, the number of eggs collected from each pair on an average, by dividing that figure into the total number of eggs collected, we would get the total number of breeding pairs. In 1941, it is recorded that 72,498 eggs were collected for the Estate in about six weeks, i.e. probably from about April 20th to about June 1st. Hardly any other eggs can have been collected by people not working for the Estate during that season, as the sandhills had been taken over as a

military area. Mr. Joe Farren, the watcher at Ravensglass for more than 25 years, considers that a pair usually lays again on about the second day after the nest has been robbed of a single egg, until the normal clutch has been laid, and that then there are a few days before the birds lay again. He also says that he has taken up to 13 eggs from one nest. It is certainly a matter of fact that in pre-war years dwarf, deformed and unnaturally marked eggs with poor chalky shells could often be found towards the end of the collecting period—probably a sign of exhaustion in some of the birds.

As it does not seem that we have much exact knowledge of the laying behaviour of the gulls when their nests are robbed, i.e. whether they really do go on laying till the normal number of eggs in a clutch has been laid, or whether they are discouraged for longer than a couple of days, or indeed whether a pair actually uses the same nest the whole time, some uncertainty still surrounds the number of eggs likely to be provided by one pair during a given period. However, without going into details we might suggest that an average pair would provide either two or three clutches of 2 or 3 eggs each in a four week collecting period, or an average of 1 to 2 eggs per week. In the 1941 season of six weeks the limits of eggs per pair would be, taking the lower figure, probably 5 to 10, taking into account the longer period : taking the higher figure it would be 6 to 12. Taking a round figure of 73,000 eggs collected, we would thus get limits for the total population of *c.* 14,600–7,300 or *c.* 12,150–6,000 respectively. Obviously the arithmetic mean of these figures could be reasonably accepted, if the extremes are agreed upon, and we therefore again reach a figure for the total population of about 10,000 pairs in 1941. In the writer's opinion a mean figure of 7-8 eggs per pair in itself seems more acceptable since it would better account for signs of exhaustion in egg laying than the low figures of 5-6, the higher figures (10-12) being altogether too high for an average. Applying this estimate to the 1951 season of four weeks approximately, when 24,568 eggs were collected by the Estate, we find that the total population would be between 7,500 and 3,750 or 3,330 : that is, if the total number of eggs collected was 30,000, and Mr. Farren estimates that about 6,000 eggs may be taken by people not working for the Muncaster Estate. The mean of these figures is 5,000-5,500, which agrees well enough with the count.

In conclusion, then, the evidence collected in 1951, together with local opinion and the record of the egg-collecting, suggests that not so very many more than 10,000 pairs are likely to have bred at this colony before the war. Consequently the 1938 estimate must be regarded as grossly inaccurate. Thus, the colony would probably have fallen into Hollom's fourth group (1,001-10,000) even if right at the top of it, and becomes comparable with some ten other colonies throughout the British Isles, rather than being so vastly superior in point of numbers, as formerly reported. By comparing the breeding area of this year with that of 1948 and pre-

war, it is quite clear that a decrease has occurred and is possibly still continuing. Further, it is seen that the deserted areas are those most quickly and easily reached when approaching from Drigg or Ravenglass: consequently they are probably the places most heavily cropped by the egg-collectors and at the same time least easily protected. It is reasonable enough, without going into details, to suggest that the decrease has been largely due to excessive egg-collecting by unauthorised persons continued too long into the summer, during the immediate post-war years: and that this has been connected with an inability to afford the same degree of protection and control as before the war.

I should like to thank Mr. P. A. D. Hollom and Mr. E. M. Nicholson for helpful advice and criticism when preparing this article, and also the staff of the Muncaster Estate Office for giving me access to their records. To Mr. J. Farren of Ravenglass I am much obliged for providing many details of past occurrences and for the assistance of his experienced knowledge.

[We accept Mr. Marchant's conclusion, in the light of his careful resurvey, that the level of the pre-war breeding population of Black-headed Gulls at Ravenglass should be taken as about 10,000 pairs, rather than as "some tens of thousands breeding pairs, probably less than 50,000" previously stated (*antea*, vol. xxxiii, p. 220). The effect of this very large revision is to reduce the estimated breeding population for England in 1938 from about 70,000 pairs to about 35,000 pairs. This underlines the need for treating with the greatest reserve estimates of the size of large colonies unless they are made with the utmost thoroughness and are, if possible, re-checked by an independent observer. Reference to the original return shows that Mr. Marchant noted that owing to lack of time he had been unable to attempt an estimate himself, and that he made it clear that he was merely passing on and commenting on an estimate tentatively put forward by local watchers. Moreover the Schedule declared that it was "not intended to carry out a census, but any estimate of numbers will be welcome." At subsequent stages, however, the resulting figures tended to be taken more literally than the circumstances of their collection could justify. It is fortunate, therefore, that the estimate has now been critically examined while it is still possible to carry out a comparison between the 1938 colony and the present one.—EDS.]

NOTES.

Effect of a snow-storm on breeding birds.—With reference to the article on this subject (*antea*, vol. xlv, pp. 57-59), Mr. C. E. Bruce-Gardyne reports that in April, 1949, he had under observation nests of a Blackbird (*Turdus merula*) and a Song-Thrush (*T. ericetorum*), both in rhododendrons, at Friockheim, Angus. On the morning of April 7th about 3 inches of snow fell. The Blackbird continued to incubate four eggs throughout the storm, but left the nest for a short while when the storm was over. The eggs, however, failed to hatch. The Song-Thrush, which had a more protected site than the Blackbird, also sat throughout the storm, but in the afternoon the nest was found tipped to one side, full of snow and apparently deserted. The snow was cleared out, the nest straightened, and the bird came back. The three eggs had all hatched by the evening of April 12th.

Magpie covering eggs with nest-lining.—On April 12th, 1951, it was decided to destroy the nest of a Magpie (*Pica pica*) built in a low but extremely thick thorn bush near Newbury, Berks. The nest was cut out carefully, and then examined, but no eggs could be seen, although the birds had been in occupation, and one had been put off it several times, so that it had been presumed that incubation had started. The nest appeared in good condition and the lining (of the usual rootlets) was smooth and undisturbed. However, on pulling the structure about, the lining became displaced, and eggs were rendered visible. There were six of them, concealed under the lining, and all proved to be fresh. G. H. R. PYE-SMITH.

Magpie running.—As I can trace no record of a Magpie (*Pica pica*) running it may be worth recording that on April 9th, 1951, whilst travelling by train through Somerset I noticed, from a carriage window, a bird of this species running swiftly across an area of close cropped grassland. The bird was about twenty yards distant and it was impossible to estimate how far it ran owing to the motion of the train. E. G. RICHARDS.

Short-toed Larks in Sussex and Suffolk.—On April 29th, 1951 Michael Gore and myself saw two larks in appearance sufficiently different from any birds known to us to rouse our immediate attention. The birds were encountered feeding on the short grass of a water meadow adjacent to Pagham Harbour, Sussex, a site extremely popular with many types of migrant passerines.

After observing them for two minutes we concluded that the birds were not Sky- or Wood-larks and were probably of a species that is seldom met with in Britain. The birds were seen for a total of about ten minutes at 15-20 yards and briefly at 10 yards, 10.5 × 40 and 6 × 30 glasses being used. Light was good but cloudy, thus an accurate account of detail was possible.

The bill appeared relatively stouter than a Sky-Lark's (*Alauda*

arvensis) and yellowish in colour. Legs were flesh coloured. Gait, a walk with occasional hop. The back was very boldly marked, feathers black-brown with light edgings, producing a chequer or zigzag pattern quite unlike that of any familiar lark. Underparts were pale sandy in colour and quite unstreaked except for a faint uniform collar on lower part of throat, formed by small streaks. An obscure darkish patch, difficult to define, on the side of the upper breast near the wing-coverts, was observed on one of the birds by myself and this detail was only seen for the duration of one short inspection, being at other times not visible or noticed. The head was that of a typical lark, crown sandy-brown with darker streaks running from forehead. Nape was lighter with uniform faint streaks. A pale sandy eye-stripe running from the eye was not very extensive. There was no trace of a crest.

The tail was longer than a Woodlark's (*Lullula arborea*) and near enough to that of a Sky-Lark, though I have found the latter species to vary to some small degree. In colour, when in flight, the central part of the tail was distinctly darker than the rest of the plumage. The outer feathers were light. The wing pattern was not so clearly seen but possessed no distinctive feature.

The birds did not call. No accurate estimate could be made of size, but it was obvious that in this respect, they were not far removed from Sky-Larks and could have been smaller.

B. METCALFE.

Commander F. H. Phillips, Mr. R. L. Vernon and the writer visited Havergate, Suffolk, on June 24th, 1951. Whilst quietly watching waders, terns and gulls from a hide, our attention was attracted by the appearance of a lark looking noticeably light-brown in colour, which had settled on marshy ground not more than 25 yards distant. Such unusual characters as stout but pale yellowish bill, broad buffish-white lores and superciliary stripe, whole of throat, breast and belly unstreaked except for blackish-brown markings on either side of neck, were clearly visible through $\times 8$ binoculars and $\times 30$ telescope. It was in fact so unlike the numerous Sky-Larks (*Alauda arvensis*) present that we were convinced the bird was indeed one of the rare British larks. Later, on consulting *The Handbook* it was evident the bird could be none other than a Short-toed Lark (*Calandrella brachydactyla*).

The following are the plumage details as we made them :—

Head and nape light brown, finely streaked ; mantle, back and wings greyish brown with prominent dark brown markings ; tail dark brown. Lores whitish with superciliary stripe pale buffish-white, ear coverts dark brown, finely streaked. Chin and neck white, breast and belly pale buffish-white with deeper buff across the upper breast. Pronounced blackish-brown markings on either side of the upper neck, with few light brown markings. Bill pale yellowish-brown, legs same colour.

The bird was under review for at least five minutes, then with

strong undulating flight it flew out of our field of view, only to return for just a short period. Once it sang from the ground, the gape being a bright yellow-brown colour. Unfortunately, much of its song was inaudible due to the constant calling of terns and gulls, but thin high-pitched notes were occasionally heard.

It is believed that this is the first recorded instance of a Short-toed Lark for Suffolk.

BERNARD KING.

Early nesting of Tree-Creeper.—Mr. A. V. Cornish reports that at Dunster, Somerset, he saw a Tree-Creeper (*Certhia familiaris*) nest-building on March 25th, 1951. The nest contained two eggs on April 1st and five on the 8th. Three well-fledged young were visible on May 6th and all had flown by May 13th. *The Handbook* states that the breeding season begins in "the latter part of April"; another case of early breeding has recently been reported (*antea*, vol. xlv, p. 71).

Blue Tits usurping a Great Tit's nest.—A pair of Great Tits (*Parus major*) built in a nesting box at Oxford in the middle of April, 1951. On the 21st there were two eggs and by the 26th five. That afternoon a pair of Blue Tits (*P. caeruleus*) invaded the box. The Great Tits made a good deal of noise and twice attacked the Blue Tits, but were driven off and the latter remained in possession. The weather turned cold and the Blue Tits did not lay till May; seven eggs were laid and they hatched by June 4th (possibly a day or two sooner) and the young flew on the 16th. Under the Blue Tit's nest was the Great Tit's containing five eggs.

M. C. RADFORD.

[Cases of usurpation previously reported (*antea*, vol. xliii, p. 184) include attacks by Great Tits on Blue Tits, but not *vice versa*.—EDS.].

Great Grey Shrike hovering.—I can find no mention of hovering by the Great Grey Shrike (*Lanius excubitor*) in *The Handbook*, in Olivier's *Monographie des Pies-Grièches* or in Naumann's *Vögel Mitteleuropas* but there is a brief mention in Pfeifer's *Taschenbuch der Deutschen Vögelwelt* that the species sometimes hovers like a Kestrel (*Falco tinnunculus*).

In North-west Germany where the bird is not uncommon, I have seen them hovering several times during the last two years. The bird normally has an undulating flight and before hovering rises about six feet higher than usual and then hovers at an angle of about 30 degrees from the perpendicular. It surprised me that on each occasion the tail was kept closed, unlike the Kestrel's. Possibly this is associated with the more perpendicular position that the shrike adopts.

They seem to remain stationary only for a short time; fifteen seconds was the longest that I noticed. This habit is associated with hunting, for I watched one on March 3rd, 1950, that was hovering over a stubble-field in Schleswig-Holstein. The bird

searched several different spots in this way and then suddenly dropped down to the ground where it appeared to catch and eat some prey. The usual hovering height was from three to four yards off the ground and when dropping down the tail is held above the back and the wings downward, rather like a Sky-Lark (*Alauda arvensis*).

JEFFREY G. HARRISON.

Unusual feeding behaviour of Willow-Warblers and Whitethroat.

—At a small reservoir at Ashby-de-la-Zouch, Leicestershire, on April 22nd, 1951, a bright sunny morning with a cool east wind, I saw two Willow-Warblers (*Phylloscopus trochilus*) feeding on a grassy bank. After a time they flew well out over the water, hovering some six inches above its surface. They appeared to perch on the leaves and stalks of Broad-leaved Pondweed (*Potamogeton polygonifolius*), sometimes those under the water, so that their bodies touched the surface. They pecked at something near the surface, presumably insects, fluttering their wings as they did so. I also saw a Whitethroat (*Sylvia communis*) behaving in a similar manner some distance away. All three birds continued these tactics for the remainder of my stay, half-an-hour or so. Hirundines which were hawking low over the surface of the water disturbed them by making dashes at them as they perched on the weed.

I have never seen warblers do this before, nor have I seen it referred to in any literature.

G. ROWBOTTOM.

Song of Female Blackcap.—On April 22nd, 1950, whilst on the Quantock Hills, Somerset, I heard fairly good song from a female Blackcap (*Sylvia atricapilla*). The songster was perched in the open, slightly above eye level, and by making use of existing cover I was finally within six feet of it and clearly noted the red-brown, not black, cap. The song consisted of short phrases of two or three seconds duration and was far more subdued than that of the male although possessing the same rich warbling notes.

E. G. RICHARDS.

Mistle-Thrush roosting on a house.—Mr. Derek C. Hulme has sent an account of a Mistle-Thrush (*Turdus viscivorus*) which roosted on the window-sill of a suburban house in Derby. It was observed on every night but three between January 5th and February 5th, 1951. Once it had settled down the bird was not disturbed either by lights, movement or observers on the inside of the window, or by cars in the drive outside. The window-sill faced N. E., but the bird continued to roost there in E. or N.E. winds.

Blackbird using feathers as nest-lining.—Mr. M. C. Powys Maurice reports that on April 22nd, 1951, at Droxford, Hants, he found the nest of a Blackbird (*Turdus merula*), the lower half of which was neatly lined with feathers. The feathers were identified as breast feathers of a female Blackbird.

Blackbird attacking its own image.—Throughout March, 1951, a male Blackbird (*Turdus merula*) frequently attacked its own image

reflected in the window of a garage in the garden of my house, and in the window of a neighbouring garage. At times the bird stood on the branch of a tree and pecked at its image, but more commonly flew at it from a bough about a foot or eighteen inches away, its beak repeatedly tapping hard against the window pane.

E. F. WARREN.

A "Double" Robin's nest.—On March 20th, 1951, a Robin (*Erithacus rubecula*) completed a nest on a ledge inside a small shed in my garden at Horton-cum-Studley, near Oxford. The eggs laid during the next few days were eaten by mice, and the nest was deserted about March 28th, 1951. The pair of Robins (both identified by coloured rings) then reared a brood in a stable nearby, the young birds being fledged on May 11th, 1951. A few days later the fledglings left the garden, and the cock bird has not been seen since. On June 17th, 1951, I noticed a Robin entering the small shed in which the earlier nest had been built, and on examining the nest I found that a second "cup" had been made, and well lined, in the considerable mass (7 in. high) of grasses and leaves of the original nest. The old "cup" was somewhat displaced and distorted by the pressure of the new one. The Robin now (June 29th) incubating five eggs has been identified by her ring as the hen of the pair already referred to, but her original mate (which was very tame) has not reappeared, and an unringed Robin was trapped and ringed within a few yards of the nest on June 21st, 1951.

RAYMOND F. BAWTREE.

Dominant and Submissive Behaviour of Bee-eaters.—On May 8th, 1951, several Bee-eaters (*Merops apiaster*) were feeding or resting in an area about a quarter of a mile from their breeding site in Provence. One Bee-eater flew to another that was perched on a piece of dead tamarisk and made as if to perch beside it, but the other raised its head and they sparred briefly, then one fled, the other pursuing it a yard or two, but then desisting. A moment later another Bee-eater, "A," with an insect in its bill, glided up to a bush on which five others were sitting and perched a few inches from one of them. This latter raised its head, with bill pointed defensively at the alighting bird "A." "A" then swallowed his prey, flew to a perch a yard away and settled beside "B." As he alighted beside her "A" cuffed "B" hard with his wing, striking downward and raising the offside wing in the same manner as a fighting dove or pigeon. "B" cowered and lowered her head, whereat "A" desisted and after perching bolt upright with head feathers raised for a moment or two, he relaxed, as did "B," and they both perched peacefully side by side. After a few minutes "A" rose, circled, alighted on a perch some yards away and called, whereat "B" flew straight to him and perched beside him.

Identical behaviour was seen on the same day between two other "pairs" of Bee-eaters except that owing to the numbers of birds flying about I was not able to keep track of them once they had

taken wing again. In one case the " alighting and cuffing " bird had an insect in its bill which it did not eat till afterwards when they were sitting relaxed together. In each case the submissive bird appeared from its slightly less brilliant colouring to be a female. My own opinion is that this behaviour is connected with pair formation, only females ready to pair responding by submissive behaviour when thus attacked, and males or " unripe " females either fleeing or responding defensively. Further observations are of course needed to prove or disprove this explanation.

DEREK GOODWIN.

Unusual Feeding Ground of Lesser Spotted Woodpecker.—On May 3rd, 1951, I was watching a Reed-Bunting (*Emberiza schæniclus*) in the extensive reed bed of the worked out portion of a gravel pit at Aldermaston, Berkshire, when I saw a small pied bird in the reeds beyond. This bird, which was readily identified as a male Lesser Spotted Woodpecker (*Dryobates minor*), was watched for the next seventeen minutes at ranges from six to fifty yards, working up the stems of the Great Reed Mace (*Typha latifolia*). I was unable to see what food it was gathering in spite of the good light, short range and aid of $\times 8$ binoculars. Some reeds it merely probed, others it tapped lightly whilst others again it split open.

At the end of this time it flew off to an ivy-covered elm tree near by.

K. D. G. MITCHELL.

Rough-legged Buzzard in Co. Galway.—On September 5th, 1950, after stormy weather, it was learned that a large hawk had been picked up alive on the mountain near Leenane, on the northern boundary of Co. Galway. Next day I was able to inspect the bird which proved to be a Rough-legged Buzzard (*Buteo lagopus*), an adult female on wing measurement: it was still alive and taking food, but unable to fly, having probably been damaged internally during the recent storm. It died within a day or two, and it is understood that it was forwarded with the help of Major R. F. Rutledge to the Dublin Museum for preservation.

The interest of this record lies not only in the fact that this is the first absolutely authentic record of the species in Connaught (*vide* " A list of the birds of the Counties of Galway and Mayo," by R. F. Rutledge, *Proc.R.I.A.*, vol. 52, 1950), but also in the earliness of the occurrence, previous Irish records apparently not being before October (*vide* " A list of Irish Birds," by G. R. Humphreys, 1937). English occurrences before October are also unusual, according to *The Handbook*.

S. MARCHANT.

Bittern " freezing " when standing on open ground.—Mr. Bernard King has sent an account of a Bittern (*Botaurus stellaris*) which was seen to " freeze," with head and neck extended and bill pointing upwards, on an open pathway at Blagdon reservoir, Somerset, on January 7th, 1951. The bird was watched from a car and maintained its posture for some two minutes before walking off down the

track "with a slow, high-stepping gait, sometimes picking up what appeared to be small pieces of grit." The bird eventually flew when Mr. King got out of the car. We understand that a number of observers saw a Bittern which kept on "freezing" in a fairly open spot at Cley, Norfolk, in the autumn of 1951.

Canada Goose Diving.—On April 14th, 1951, on the lake at Bretton Park, West Yorks., a Canada Goose (*Branta canadensis*) which had been swimming along quietly not far from the shore, suddenly submerged, with a considerable commotion. It reappeared some feet further on and repeated its underwater excursion twice. On the third and final dive it remained submerged for about 10 seconds and surfaced a correspondingly greater distance away.

There seemed to be no external stimulus for this strange display. Nothing was present to alarm the bird and other members of the same species were in the vicinity, some apparently sitting.

The weather was fine with a cold north-westerly wind.

A. N. SYKES.

[Mr. N. G. Blurton Jones, who has spent much time watching Canada Geese, informs us that, though young birds dive readily when in danger, he has never seen an adult do so, even when in moult.—EDS.]

American Wigeon in Cheshire.—On February 28th, 1951, Mr. Mark Dean saw a drake American Wigeon (*Anas americana*) on Tabley Mere, Cheshire and on the following day I saw it in a flock of some sixty Common Wigeon (*Anas penelope*).

It is, I understand, the first known occurrence of this species in the county, although from May 19th to 31st, 1937, I saw on Ros-therne Mere an obviously hybrid American Wigeon, which had doubtless escaped from captivity. On enquiring this year at the Severn Wildfowl Trust we were told that none has escaped from the collection there, and we have not discovered evidence of an escape from any other source. The possibility of its having reached England under its own power is strengthened by the fact that Dr. Finnur Guddmundsson of Reykjavik saw an adult drake in breeding plumage on June 27th, 1949, on Lake Myvatyn, Iceland. He has written in a letter to Mr. J. Fisher to say that F. Coburn's records of its breeding in Iceland fifty years ago are unreliable, although it is likely that he shot an adult drake there in 1899. The species has not been recorded in Iceland between 1899 and 1949, but it is at least possible that the bird he saw in 1949 or any other that reached Iceland might accompany the Common Wigeon on their way south.

A. W. BOYD.

Defensive behaviour of Cormorant.—Mr. Bernard King has sent an account of a display by a Cormorant (*Phalacrocorax carbo*) in defence of its young, seen at Steep Holm, Bristol Channel, on June 18th, 1950. A pair was together, one attending the chick, when a third bird arrived. The bird at the nest uttered deep, guttural

calls, spread its wings over the chick and began a rhythmic side-to-side movement of the head, accompanied by slow, alternate stamping of the feet. The performance lasted two or three minutes before the intruder departed. Mr. King points out that this display has some affinities with an autumn display already recorded (*antea*, vol. xliii, p. 341).

Cormorant perching on a cable.—On June 11th, 1951, near Pentre-berw, Anglesey, Messrs. P. E. S. Whalley and M. J. Wotton watched a Cormorant (*Phalacrocorax carbo*) resting on a high tension electricity cable at a considerable height above the ground. Despite its natural insecurity in such a position the bird even extended its wings to dry for a short while.

Reactions of Fulmars to Skuas.—The note on aggressive display of Fulmar (*Fulmarus glacialis*) (*antea*, p. 107), prompts me to send in the following observations I made whilst aboard *O.W.S. Weather Explorer* in the North Atlantic in July, 1950.

The Fulmars tended to collect into more compact flocks on the water and fly more together whenever there were skuas about.

On July 13th, a single Arctic Skua (*Stercorarius parasiticus*) chased one or two Fulmars. None of them dropped any food and the skua flew off without feeding. There is no record in *The Handbook* of Arctic Skuas attempting to parasitize Fulmars. When the skua first appeared most of the Fulmars flew up to the ship leaving one by itself on the water. When the Arctic Skua flew near this bird it reacted in a similar manner to the one described in the note referred to above, the only differences being that its bill was opened wide and its partly-opened wings instead of being raised over its back were just held away from its sides.

The response to the presence of Great Skuas (*Stercorarius skua*) was more intense than that elicited by the Arctic Skua. The fanned tail was held almost vertical and the hind-part of the body raised out of the water and some Fulmars in this aggressive posture rushed towards and stopped just short of Great Skuas sitting on the water feeding on scraps. Neither species of skua responded in any way to this display.

F. R. ALLISON.

Unusual call of Curlew. —A note (*antea*, vol. xliii, p. 380) recorded a call of the Curlew (*Numenius arquata*) which did not appear to have been recorded previously. Two further records of this call have been supplied. On February 3rd, 1951, Mr. M. J. Wotton saw a party of Curlews flying along the Menai Straits, several of them calling "with a continuously repeated, rather nasal 'ark, ark, ark,' unlike any of the normal calls of the species." Mr. M. J. Rogers reports that at Cley, Norfolk, in January, 1951, both he and Mr. R. A. Richardson heard this note. Mr. Rogers adds that when he first heard the call he thought it came from geese.

Great Snipe in Somerset in 1949 and 1950.—Mr. Bernard King has sent us detailed accounts of single Great Snipe (*Capella media*)

seen on March 6th, 1949, at Blagdon, on April 3rd, 1949, at the clay pits, Cheddar, and on December 27th, 1950, at Blagdon, Somerset ; on the first occasion Mr. King was accompanied by Mr. R. H. Poulding and on the last by Mr. M. J. Wotton.

The species is described by H. H. Davis (*A revised list of the birds of the Bristol District*, p. 256) as a "very rare vagrant" to the district. A search of available county reports shows the following other records for these years :—1949—One, Yorkshire, September (two possibles, Devon/Cornwall border, August). 1950—One, Warwicks, May ; one, Berks., September ; one, Sussex, September.

Terek Sandpiper in Sussex and Suffolk.—When at the Midrips, near Camber, Sussex, on May 30th, 1951, I saw a bird working along beneath the foot-high mud bank and noted the following details : general size and build of a Common Sandpiper (*Actitis hypoleucos*) with similar bobbing action, but uniform ashy-grey above with perhaps a buffish tinge ; there was a pale stripe through the eye, and throat, breast and under-parts were pure white. The outstanding features were, however, a long, slender black bill with (as I jotted it down on the spot) "a definite slight upturn"—not so pronounced, that is, as in an Avocet (*Avosetta recurvirostra*)—and legs somewhat longer than a Common Sandpiper's and bright yellow.

In flight, skimming the water from bank to bank, the impression given was that of a ghostly Common Sandpiper with that bird's characteristic shallow, "flicking" wing action. The bird was watched for some fifteen minutes, steadily feeding, usually dipping the morsels obtained from the mud into water before swallowing. Owing to the low bank it was most convenient to watch from across the stretch of water, but views within 25 yards were obtained with 8 x 30 binoculars and 25 telescope under excellent light conditions, though a high wind was troublesome.

On checking over the details of my observations with *The Handbook*, and after examining skins at the British Museum, I am convinced that the bird was a Terek Sandpiper (*Xenus cinereus*).

A. H. BETTS.

On the evening of June 2nd, 1951, W. E. Rowe saw a strange wader on a marsh near Southwold. In better light next day he was able to identify it as a Terek Sandpiper (*Xenus cinereus*). It remained until about 16.30 G.M.T., June 6th, and was seen by a number of observers including Mr. F. C. Cook, Chairman of the Lowestoft Field Club.

In general appearance it was a conspicuously light-coloured wader, intermediate in size between a Redshank (*Tringa totanus*) and a Curlew-Sandpiper (*Calidris testacea*), with which birds it was momentarily in close company, grey (brownish not bluish) above and white below. The two dark streaks on the back converging slightly towards the tail, the bright yellow legs, and the dark, slender, upturned bill were very obvious characteristics. A small dark patch

was clearly visible at the carpal joint of the folded wing. The neck and upper breast were slightly greyed. There was a small white stripe from the base of the bill to the eye. The base of the bill was rather lighter than the remainder but this could only be seen at close range.

We did not see much of the bird in flight, but the fore-wing appeared rather dark and the secondaries to have white tips ; but there was nothing like the contrast of a Redshank's wing.

It "bobbed" in sandpiper fashion, but not so constantly as a Common Sandpiper (*Actitis hypoleucos*). It waded about the shallow pools often up to the belly feathers, and appeared to feed almost exclusively from the surface—once or twice only was the bill totally immersed. Normally it remained apart from other birds. It was once put up by a Redshank and once by a Ringed Plover (*Charadrius hiaticula*). On the evening of the 5th it appeared restless and called repeatedly, a note which I wrote as a sweet, quick "wee-wee-wee" (occasionally "wee-wee"), undoubtedly *The Handbook's* "dü dü dü." G. B. G. BENSON.

[Careful search by other observers in the area of the Midrips on June 2nd produced no sign of the bird reported by Mr. Betts. It is thus possible that these two records refer to the same individual. Attention is drawn to the photograph, reproduced on Plate 12, of a Terek Sandpiper caught and ringed at Ottenby, the Swedish bird observatory in the Baltic. Details of this occurrence, the fourth record for Sweden, together with another photograph, will be found in *Vår Fågelvärld*, 10 : 103, 123. We are indebted to Mr. A. G. Parsons for forwarding this photograph. It is also of interest to note that the first occurrence of this species in Denmark took place in 1951, an adult having been caught near Copenhagen on July 23rd. An account of this, together with a photograph of the bird which is now in the Copenhagen Zoo, appears in *Dansk Ornitologisk Forenings Tidsskrift*, 45 : 223-225.—EDS.].

Redshanks' reaction to an Otter.—On June 23rd, 1950, my wife and son and I were sitting in one of the observation huts at Minsmere, Suffolk, with the R.S.P.B. watcher. The hut faced a longish mud flat between a pool of deep water and a reed-bed. About 20 Redshanks (*Tringa totanus*) were feeding quietly on the mud with six Sheld-Duck (*Tadorna tadorna*). When a Bittern (*Botaurus stellaris*) emerged from the reeds neither Redshanks nor Sheld-Ducks showed any sign of excitement, but suddenly all the Redshanks flew up and circled excitedly over the pool, very close to the water. We noticed a large black object in the water and soon afterwards the head of an Otter (*Lutra lutra*) appeared. The Otter went on land into the reeds, only its head remaining visible. All twenty Redshanks formed a semi-circle round the head, their bills pointing towards the Otter. The birds were bowing and bobbing all the time, appearing very excited, but did not utter a call. The Sheld-Duck continued feeding quietly. After a short while

the Otter emerged from the reed-bed and walked very slowly the whole length of the mud-flat. The Redshanks formed into a solemn procession at each side of the Otter walking very slowly in step with it, bowing and bobbing occasionally, but still silent. The Sheld-Ducks joined the strange procession, walking slowly in the rear, also silent. Redshanks and Sheld-Ducks accompanied the Otter the whole way until it disappeared into another reed-bed farther away. Then the Sheld-Ducks walked back and the Redshanks flew back and continued feeding as if nothing had happened.

GUSTAV WARBURG.

Common Gulls robbing other birds of food.—Mr. E. H. Gillham has sent an account of Common Gulls (*Larus canus*) hovering over feeding Oyster-catchers (*Haematopus ostralegus*) and attempting to make them drop food by landing on their backs or by chasing them. Common Gulls were also seen to chase Rooks (*Corvus frugilegus*) which were feeding on the shore. These observations were made in the North Kent marshes in the winter 1949-50. P.A.D.H. adds records of observations made in March, 1947 in the Isle of Wight, where Common Gulls were seen to chase Fieldfares (*Turdus pilaris*), Lapwings (*Vanellus vanellus*) and Black-headed Gulls (*Larus ridibundus*), to rob them of food. A.W.B. states that Common Gulls sometimes join Black-headed Gulls in their persistent attacks on grebes when they emerge with food on the Cheshire meres.

Common Gull nesting in tree.—Col. R. Sparrow informs us that on May 11th, 1951, he visited a small colony of Common Gulls (*Larus canus*) on a small island in Loch Oich, Inverness. One pair had a nest on the horizontal bough of a Scots Pine about 15 feet from the ground. A record of nesting in birch trees in Scotland has already been published (*antea*, vol. xxxix, p. 61).

Storm-driven Kittiwake quartering ground in search of food.—Mr. Bernard King states that on February 14th, 1950, following severe westerly gales, there were three Kittiwakes (*Rissa tridactyla*) at Cheddar reservoir, Somerset. On February 19th one of these birds was observed over a long period quartering a ploughed field in search of food and only when food was obtained returning to the reservoir to sip water. On February 26th all three Kittiwakes were found dead.

Corn-Crake calling in February.—Mr. C. R. Tubbs reports that on February 11th, 1951, near Bedhampton, Hants, he heard a Corn-Crake (*Crex crex*) calling from a half-cut cabbage field. He had good views of the bird and heard it calling for 27 minutes. This appears to be an exceptionally early date for a bird to be calling, and this individual had presumably wintered.

Under-water habits of Moorhen.—On the evening of April 23rd, 1951, I noticed a Moorhen (*Gallinula chloropus*) submerge in a small pond in Denne Park, Horsham, Sussex, and hide under a loose branch of a tree with only the tip of its tail above water.

When I returned ten minutes later it submerged again and when I removed the branch it remained immobile so that it could be pushed with a stick, showing that it was not holding on to the stems of water plants with its feet. After continuing this for some time I lifted what I thought was a carcass out of the water, but it rose buoyantly. After a few seconds the bird flew away. Dr. Ticchurst states in *The Handbook* that he was satisfied that a bird which showed no more than the beak and forehead above water did not hold on to anything with its feet, but in this case a totally submerged bird was not holding on to water plants. GORDON SLYFIELD.

Leg-colour of Moorhen.—In connexion with the notes already published (*antea*, vol. xliii, p. 383 ; xliv, p. 140) on Moorhens (*Galinula chloropus*) with legs of unusual colour, Mr. A. R. T. Moody records that in March, 1950, in the water meadows of the lower Test, Hants, he saw a pure white Moorhen in which the bill and legs were bright yellow.

Drowning of Red-legged Partridge.—On April 7th, 1951, at Spurn Head, Yorkshire a Red-legged Partridge (*Alectoris rufa*) was first noticed flying northwards over the Humber approximately 200 yards from the shore. It then turned into the westerly wind, stalled, lowered its feet and settled on the water. There was a fair swell on the estuary, but the bird swam buoyantly like a duck, southwards with the current for about 60 yards. Gradually the current brought it inshore, but its head sank lower and lower, eventually dropping under water. On recovery, after ten or so minutes afloat the bird was dead ; it was found to have taken in a good quantity of saline water, but its plumage had stood the swim fairly well. JOHN R. GOVETT.

REVIEWS.

A History of the Birds of Durham. By G. W. Temperley (*Trans. Nat. Hist. Soc. of Northumberland, Durham and Newcastle-upon-Tyne* (New Series) vol. ix, 1951). Price 15s.

The County of Durham has in the past been overshadowed by its larger neighbour Northumberland in ornithological writings. Hitherto the best separate account of its birds was that contributed by Canon H. B. Tristram to the Victoria County History of Durham, published in 1905, but this was hardly more than an annotated list. Now we have a real history giving for each species what is known of its status in the past and in the present. In addition to the published writings of Selby, Proctor, Hogg, Hancock, and others, Mr. Temperley has been able to consult two unpublished lists of the birds of the county compiled respectively by Edward Backhouse of Sunderland in 1834 and John Hutchinson of Lanchester in 1840, both including statements

on the status of the species in their time. He has thus very strong grounds on which to base his estimates of the changes that have occurred in the past century and he quotes the evidence fully.

It is satisfactory to find that in spite of the great increase in population and industrialization in the east of the county, comparatively few species have disappeared altogether and it is possible to give considerable lists of species which have increased. Perhaps the most unexpected of these increases is due to the colonization of the cliffs near Marsden successively by the Fulmar, the Kittiwake, the Herring Gull and the Lesser Black-back within the last twenty years, no cliff-nesting seabirds having been recorded as breeding in the county previously. On the other hand the colonies of terns which, with the Oyster-catcher, Ringed Plover and Sheldrake, formerly nested on the dunes at the mouth of the Tees, have now almost disappeared, and the marshes and mud-flats of the Tees estuary, and Jarrow Slake at the mouth of the Tyne, have been greatly reduced in area and are much less attractive to wildfowl and waders than was formerly the case.

The loss or diminution in area of famous bird haunts on the coastline has been partially compensated by the formation of ponds due to the flooding of disused brick-fields or the subsidence of land over coal-mines and by the creation of a sewage farm for Darlington. These have provided many interesting records in recent years; whilst the western parts of the county, with a large area of moorland, some of which rises to over 2,000 ft., and the upper portions of the valleys of the Tees, Wear and Derwent, remain almost unspoilt and provide habitats for birds of many kinds.

In the introductory section of this book Mr. Temperley has provided a brief summary of the principal habitats and their characteristic birds, an account of the changes to some of which we have already referred, and brief accounts of migration and other bird movements, of the protection of birds in the county, of museums and collections and of former Durham ornithologists and their writings. A sketch map of the county is provided at the end, but there are no illustrations. In the copy sent for review there is no indication on the cover that this is a special volume of the Society's Transactions devoted to a single subject, but we understand that bound copies suitably titled are also available.

W.B.A.

The Birds of Newfoundland. By H. S. Peters and T. D. Burleigh (Department of Natural Resources, Province of Newfoundland, St. John's, 1951).

The authors of this book are officers of the United States Fish and Wildlife Service by which they were deputed to prepare it when a request was received from the Government of Newfoundland in 1941 for a book to aid the people of the island in identifying their birds.

Introductory sections deal with Ornithological Work in Newfoundland; The Study of Birds in Nature; Geographical Distribution and Life Zones; Conservation and Protection of Birds; and Systematic Classification. The bulk of the volume is devoted to the individual species, or rather subspecies, since where two races of a species are recorded from the island they are given separate headings with trinomial names not only in Latin but in English, e.g., Boreal Yellow-shafted Flicker and Northern Yellow-shafted Flicker. This seems to the reviewer very unnecessary and undesirable in a book which the authors hope "will be of special interest and use to the schools."

The book is illustrated by 32 coloured plates by Roger Tory Peterson on each of which several species are depicted. These plates are very much like those produced by Fuertes for Forbush's "Birds of Massachusetts" and cannot fail to enhance the reputation of the artist, especially amongst those who only know him through his "Field Guides."

The authors have in fact provided a text-book of Newfoundland birds, with admirable illustrations, which will doubtless long remain the standard work on the subject. But those who wish to identify birds in the field are likely to continue to use Peterson's "Field Guide" in preference to this large and heavy volume.

W.B.A.

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BRITISH BIRDS

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SHEARWATERS IN THE ENGLISH CHANNEL.

BY

E. M. NICHOLSON.

In his well-known paper, "On the Habits and Distribution of Birds on the North Atlantic", Wynne-Edwards (1935) called attention to the possibility that some of the records of shearwaters in the English Channel had been based on errors of identification due to observers having jumped to conclusions in ignorance of the number of different forms which might be present in these waters. He referred particularly to the question whether earlier ornithologists had attributed to the Great Shearwater (*Puffinus gravis*) specimens and observations which in fact related to Cory's Shearwater (*P. kuhlii* = *P. diomedea*).

The late H. F. Witherby followed this up (1940) with a review of The Species of Great Shearwaters in the English Channel in which he showed that all the Great Shearwaters identified as *P. gravis* which he had been able to trace were correctly identified. He concluded that, on our present knowledge, *P. kuhlii* "must be deemed very scarce off our coasts". In this paper he mentioned that Wynne-Edwards had informed him of some doubts about the correctness of his identification as *P. kuhlii* of a considerable number of birds seen in the Channel on September 10th, 1933, between the Casquets and Prawle Point, Devon. It was on the strength of these birds that Wynne-Edwards had raised the question and had based his conclusions about the field-characters of *kuhlii*, which were followed by various other observers.

On October 17th, 1945 (see *antea*, vol. xxxix, p. 271), I saw off southern Cornwall and Devon large numbers of shearwaters "differing from *kuhlii*" (of which I had seen dozens in the Atlantic up to two days previously) "in smaller size, absence of extension down sides of neck of dark colour from upper-parts, and lack of a white patch over the tail-base, from *gravis* also in the lack of white above the tail and the lack of a "cap", and from *puffinus* in the contrast between the dark head and blackish primaries and the brown mantle and remaining upper feathers of the wings, together with the apparently larger size." I concluded that these birds must have been *Puffinus p. mauretanicus*, which M. Noël Mayaud had found to migrate regularly round the Brittany coast and up to the Somme during July-September and which Wynne-Edwards had now recognised were the birds which he had seen on September 10th, 1933. I added "Nearly thirty examples of *mauretanicus* have been shot off the Channel and East coasts of Great Britain, but considering this total and the bird's distinctive appearance it is surprising to find that there are no British sight records The identification of birds at

sea is often difficult and the difficulty is increased by the fact that knowledge of the field-characters of some of the birds concerned is still incomplete. This is particularly true of the shearwaters, and the field-descriptions in *The Handbook* of *P. kuhlii* and *P. p. mauretanicus* appear to call for some revision (in respect of the white basal patch on the tail which is normally conspicuous in *kuhlii* as well as in *gravis* and in respect of the shade and colour distinctions, especially as between the upper and under surfaces in specimens of *mauretanicus* which do not belong to the extreme dusky type)."

While preparing this paper in February, 1946, I had written a letter to *British Birds* on Shearwaters in the English Channel in which, after referring to H. F. Witherby's confirmation of Channel records of *gravis*, I said "There is however no such firm basis for the records in this area of the North Atlantic Shearwater (*Puffinus kuhlii borealis*) which, like the Mediterranean race (*P. k. kuhlii*) has apparently only been fully verified as a British bird on the basis of skins obtained in Sussex, both picked up in early Spring Repeated N. Atlantic transects by good observers have shown that *P. kuhlii*, presumably *borealis*, moves north of its most northerly breeding stations in the Azores and the Berlengas in summer, extending uninterruptedly up to within 300 miles west of the Channel by late July. Notes kindly made available by Mr. H. G. Alexander show that on August 30th last this species, together with *P. gravis* and *P. p. puffinus* was identified at intervals up to nearly as far east as the Lizard, on a voyage which had given previous opportunities of comparison to this excellent and highly experienced observer. Philipson (*antea*, vol. xxxiii, p. 245) also found *kuhlii* extending more or less continuously up to near the Scillies on a voyage back from Jamaica on September 30th, 1939. Nevertheless available evidence indicates that *kuhlii* only reaches this extreme north-east limit of its regular range in small numbers and for at most a few weeks in August-September."

Further information only adds to the mystery why the only specimens of *kuhlii* (or *diomedea* as it must now be called) for the British Isles should have been obtained at a season when there is no reason to expect its presence in our waters and on a short strip of coast remote from that end of the Channel to which it has been traced by observation on continuous voyages from its breeding areas. In France two have been found dead near Biarritz on August 29th, 1945, a third captured on September 29th, 1938, not many miles farther north on the Bay of Biscay coast, and a fourth captured on the coast of the Channel entry, not far east of Ushant, on September 23rd, 1938. These recent French records tally closely with the evidence of the voyages quoted above that fair numbers of this warm-water pelagic species drift over the Western Approaches region of the North

Atlantic (between 40° and 50° N.) in late summer and that smaller numbers, in some years at least, continue into Biscay and Channel up to about 5° W., with the natural result that stragglers and casualties are from time to time driven onto the neighbouring coasts during this limited season. The German Baltic record of *P.d. borealis* is also an August one.

Yet all three British specimens of *P. diomedea*, including the third previously overlooked occurrence of *P.d. borealis* in Kent in January, 1901, which was recorded in 1946 by Mr. W. E. Glegg (*antea*, vol. xxxix, p. 56), have been found in the first three months of the year between Dungeness and Beachy Head, hundreds of miles north and east of the extreme normal range of the species in the Atlantic at that season. Two of these birds were found dead and the third was washed ashore alive. In view of the many ships from their Atlantic and Mediterranean haunts passing near this coast and the improbable dates of occurrence the possibility of their passage having been humanly assisted cannot be ruled out. Another puzzling feature is the absence of any further British specimens (as distinct from sight records) over so long a period as 37 years, during which so many oiled birds have been examined.

The letter referred to above was never published since it led to a correspondence with the late B. W. Tucker which showed the need for fuller information. I accordingly arranged, by courtesy of the Admiralty, for a reconnaissance starting from Fowey on H.M.S. *Fort York* on September 2nd, 1946, which Tucker was unfortunately unable to join. Lt.-Cdr. Hammond kindly set a course down to Lat. 50° N. which we followed, through the area in which *mauretanicus* had been seen the previous October, most of the way between 5° and 4° W, altering course NE at 16.25 BST and passing off Start Point and Berry Head to shelter in Brixham Roads from a severe gale which kept us stormbound for the remainder of this trip. Although passing at the right season through a favourable area with plenty of Storm-Petrels (*Hydrobates pelagicus*) we saw few shearwaters; 4 at about 50° N. 4° 30' W. were definitely Manx and after a two-hour interval some ten others were noted 3-4 miles off Start Point which were probably Manx also, but the light was by then too bad to eliminate the possibility of *mauretanicus*.

Another offer of help from the Royal Navy in the following year unfortunately could not be taken up and it was not until September 20th, 1948, that (after a night sail across the Channel on 17th-18th) I was able to begin a search from Alderney in the yacht *Petula* (Lt.-Col. H. G. Hasler, D.S.O.), accompanied by James Fisher and Capt. E. Dacre Stroud R.M. It was a dull morning with sea-fog and a light westerly breeze, and our progress was very slow. After seeing some unidentified shearwaters during the first hour-and-a-half after sailing (about 0800

BST) we were passed at 9.35 by two shearwaters uniformly brown above and below, and at 10.21, when we were about 6 nautical miles NNE of Alderney, 13 or 14 *mauretanicus* flew close under our stern. They travelled low over the water in fairly close line abreast with strong, fast wing-beats and no appreciable gliding or canting, no doubt owing to the light wind. They were the same apparent size as *P.p. puffinus*, the upper-parts being all dull dark brown with no visible blackish plumage. While rather less than half of them appeared more or less equally brown below, the under-parts of the majority were brownish-white, although in no case as pure white as in the Manx Shearwater. The position was about $49^{\circ} 49' \text{ N.}$, $2^{\circ} 7' \text{ W.}$, and the depth nearly 40 fathoms, on the edge of the Hurd Deep. Although we cruised about in this area for some hours we saw no more shearwaters near enough to be identifiable except one definite Manx at 17.20 in about $49^{\circ} 50' \text{ N.}$, $2^{\circ} 50' \text{ W.}$, with very white under-parts and blackish plumage above. The following day, at about $50^{\circ} 27' \text{ N.}$, $1^{\circ} 3' \text{ W.}$, (roughly 10 miles SSE of Ventnor and in full sight of the coast) we saw a typical Manx, blackish above and white below and close to the same spot James Fisher saw another brown *mauretanicus*, as dark below as above. This was about 10.10 hrs., in about 20 fathoms.

On May 10th, 1949, near Aigues-Mortes on the Mediterranean coast of France P. A. D. Hollom and I saw some fifty shearwaters moving east during a stiff offshore Mistral, all of which appeared rather warm brown above in the sunlight and showed "underwing usually only white in centre with darker lines running towards leading and trailing edges" (P.A.D.H.), although only two or three had brownish under-parts. These were within 250 miles of breeding places of *mauretanicus* but closer to those of *yelkouan* discovered by Mayaud and Heim de Balsac among islands near Marseilles. M. Mayaud informs me that *mauretanicus* has not been recorded on this coast by French ornithologists but its occurrence in waters so near its known breeding grounds can hardly be exceptional, and is supported by the specimens examined by Collingwood Ingram (1926) in a Nice taxidermists' which had been brought in by local fishermen.

My next contact with *mauretanicus* was off the Ile de Batz near Roseoff, Finistère, on September 5th, 1949, when, about 16.30 hrs., large numbers began to pass about $\frac{1}{4}$ -mile and more offshore, heading eastwards in a strong southerly wind, at times wheeling rather high above the skyline and all showing brown (not black or blackish) upper-parts and in most cases whitish under-wings with brown edges, a few however being brown below as well as above. Probably over a hundred went past in half-an-hour; observation was helped by the good light behind me, a position on rising ground above the shore and by the use of Ross 12 x 50 marine binoculars kindly loaned by the Director of the Roseoff

Marine Biological Station. There were definitely none passing either the previous afternoon or the next, and this, taken with the previous record, suggests that a stiff breeze blowing from offshore may be a factor leading these birds to come upwind as far as possible and then travel close enough to the coast to be observed by watchers on land who in other weather conditions might be unable to see them.

Further field confirmation of Mayaud's discovery of the large-scale immigration of *mauretanicus* in summer along the French side of the Channel was obtained in 1949 by R. M. Lockley, who had at the last minute been prevented by an accident from accompanying us on the previous year's cruise but on June 12th, 1949, found within 5 miles of Guernsey three very brown-backed, dull-bellied, medium shearwaters, evidently *mauretanicus*, in waters in which a Manx was also seen, other Manx Shearwaters being identified on the two following days near the Roches Douvres off Brittany and also north of Herm.

On September 13th, 1949, leaving St. Helier at 08.10 hrs., Lockley saw two shearwaters slightly larger than Manx with brownish sides to their bodies flying west just off the harbour, and several dozen more brownish shearwaters (as well as a party of 7 Manx and one odd bird of that form flying separately) on a return trip to Granville, Normandy, by the Isles of Chausey. The weather was rainy with a NNE wind blowing at about Force 4 on leaving.

On July 30th, 1950, when sailing between Jersey and Lezardrieux, Côtes-du-Nord, France, in *Riduna III* (Skipper B. M. Arnold, D.S.O.), Lockley saw several flocks of shearwaters, but only managed to come up with one, about four miles east of Barnouic Rocks. This contained about forty individuals, of which about half were identified as *P. p. puffinus* and the rest as *mauretanicus*. The distinctions were clear; *mauretanicus* was drab brown on the back merging into dirty white beneath and smoky cream on the undertail, and appeared slightly larger than the Manx, which *in contrast* appears as a brilliant black-backed and crisp-white bellied bird. The flock rose from the water just out of gunshot, but soon after one *P. p. puffinus* came within range (the only bird to do so); on being secured it proved to be a male with undeveloped, or regressed, organs.

On Augst 1st, on the return journey between Lezardrieux and Jersey, when the yacht was west of Barnouic Rocks and about south of Roches Douvres, Lockley and Arnold saw several parties of shearwaters, and some individuals alone, and passed close enough to identify the individuals in three parties of 12, 15 and 30. Roughly one-third of these could be distinguished as *mauretanicus*, it being a calm day suitable for careful comparison, and again the *P. p. puffinus* stood out very sharply black-and-white in contrast with the muddy-looking, slightly larger *mauretanicus*.

In Lockley's experience the region between Roches Douvres and Granville therefore appears to be a collecting or feeding ground of the medium-sized shearwaters in early autumn. Many storm-petrels also frequent this area and were seen by him on all voyages mentioned.

In 1950, I made the sea crossing from Gorey in Jersey to Carteret in Normandy on August 31st and back on September 14th without seeing any shearwaters either way, but weather was unfavourable throughout this period and I was unable to make any special search at sea. The only shearwater which I saw at Carteret was a definite Manx flying very close inshore on September 13th.

On the English side of the Channel Lt.-Col. Hasler kindly arranged a further cruise in 1949 sailing from Weymouth on the evening of September 10th. (Crossing from Jersey to Weymouth that day by the mail steamer in good weather with first-rate visibility I saw only one shearwater, about 10 m. N of the Casquets, which was probably *mauretanicus*, the mantle being brownish but the wings blackish). On this occasion V. C. Wynne-Edwards and C. P. Blacker joined *Petula* and we cleared for France in fair weather with high hopes of finding how far the flocks of *mauretanicus* ranged across the Channel, but soon after we passed the Shambles lightship towards midnight the wind got up and, after a fruitless and unpleasant day in which the few shearwaters seen were either Manx or unidentifiable, we were forced to run for shelter into the Yealm, which we made after a fast passage without ever having hoisted the mainsail. The next day, the wind blew with undiminished force and we were unable to leave; we saw only two shearwaters, probably Manx, which came close in under the coastguard station. On the 13th we crossed the Yealm Bar at 14.50 into a sea which had not much moderated, with a fresh east breeze. About $3-3\frac{3}{4}$ nautical miles S. of Rame Head, Cornwall, and some 5 miles from Wembury Point, Devon, a very dark shearwater passed us with little white on the under-parts, a diagnostic character of *mauretanicus*. The weather again worsened and at 19.00 hrs. we once more had to abandon our objective and to make for the shelter of the Helford River, which we reached about midnight. The weather continued thoroughly unsatisfactory and the cruise was abandoned on September 15th.

Thus of these few searches for shearwaters in the Channel three had to be curtailed at an early stage owing to storms, and despite the favourable season and area none afforded a glimpse of any of the three larger species *gravis*, *diomedea* or *griseus*. Some success was, however, achieved in reducing the degree of ignorance of the distribution and field-characters of *mauretanicus*, and there were plenty of opportunities of contemplating the difficulties and pitfalls of bird observation in these waters.

The most important finding is that field observation confirms the obvious deduction from the number of specimens of *mauretanicus* recorded in the North Sea and (particularly on the French side) in the Channel, that this very distinct form is present in substantial numbers annually and that it is at least as readily separated in the field from the British breeding race as the Scandinavian Lesser Black-backed Gull (*Larus f. fuscus*), the White Wagtail (*Motacilla a. alba*) or the Blue-headed Wagtail (*Motacilla f. flava*). It does not make sense that a bird so often shot within comparatively short distances of our coasts and so conspicuously mobile should never have been seen in British waters, yet (up to the publication in this issue of two 1951 occurrences) that is how the record stands. The question therefore, arises: when *mauretanicus* has been viewed but not shot here, as it must have been, what has it been wrongly identified as? Tucker's view (*in litt.*, Feb. 16, 1946) was that "no experienced observer seeing the birds reasonably close could take *mauretanicus* for *kuhlii*" and that "for what my opinion is worth, I am convinced that when *mauretanicus* is seen in English waters it is with Manx that they are confused and not with the big ones. After all they are only races of one species, so what more natural?" M. Mayaud expresses a similar opinion from his own expert knowledge. Tucker however was relying on a recollection "that birds in the Mediterranean don't look very different from Manx in respect of their under-parts, and as the observations to which I refer were made off Naples I presume these were *mauretanicus*, though I suppose there is a possibility they were *yelkouan*". As *yelkouan* inhabits the Mediterranean from Marseilles and Corsica eastwards it seems quite likely that the birds on which he based his view were of that race (which is indistinguishable in the field from the Manx) and not as he supposed *mauretanicus*. In any event my subsequent investigations have deepened my own suspicion that, at the long ranges and in the poor conditions of observation so frequent with birds at sea, observers who are not fully aware of the range of plumages of *mauretanicus* may on occasion mistake the lighter examples for *kuhlii* and the darker examples for *griseus*. Such a mistake certainly could not happen if either the size or the style of flight were critically studied, since in all plumages of *mauretanicus* there is a plain resemblance to the Manx in both of these points. But unless the range is close and the light good or there are other known birds really close alongside for comparison there is always a special need for caution in judging the size of birds at sea, and shearwater flight varies sufficiently in different wind conditions to mislead observers with little (or only long previous) experience of the different species. The skins at South Kensington show so much variation, both in size and in plumage, that the largest *mauretanicus* is not markedly shorter in over-all length than the shortest *diomedea* or *griseus* and the darkest *mauretanicus* is not markedly paler under the wing than the palest *griseus*.

While the material for a definitive field description of *mauretanicus* is not yet available the following amplification of the *Handbook* account is believed to be reliable:

Under-parts.

Manx, at all seasons, pure white from base of bill to dark edgings and tip portion of tail. Flanks and sides also white, and under-wings white with narrow blackish leading edges and broad blackish trailing edges and tips.

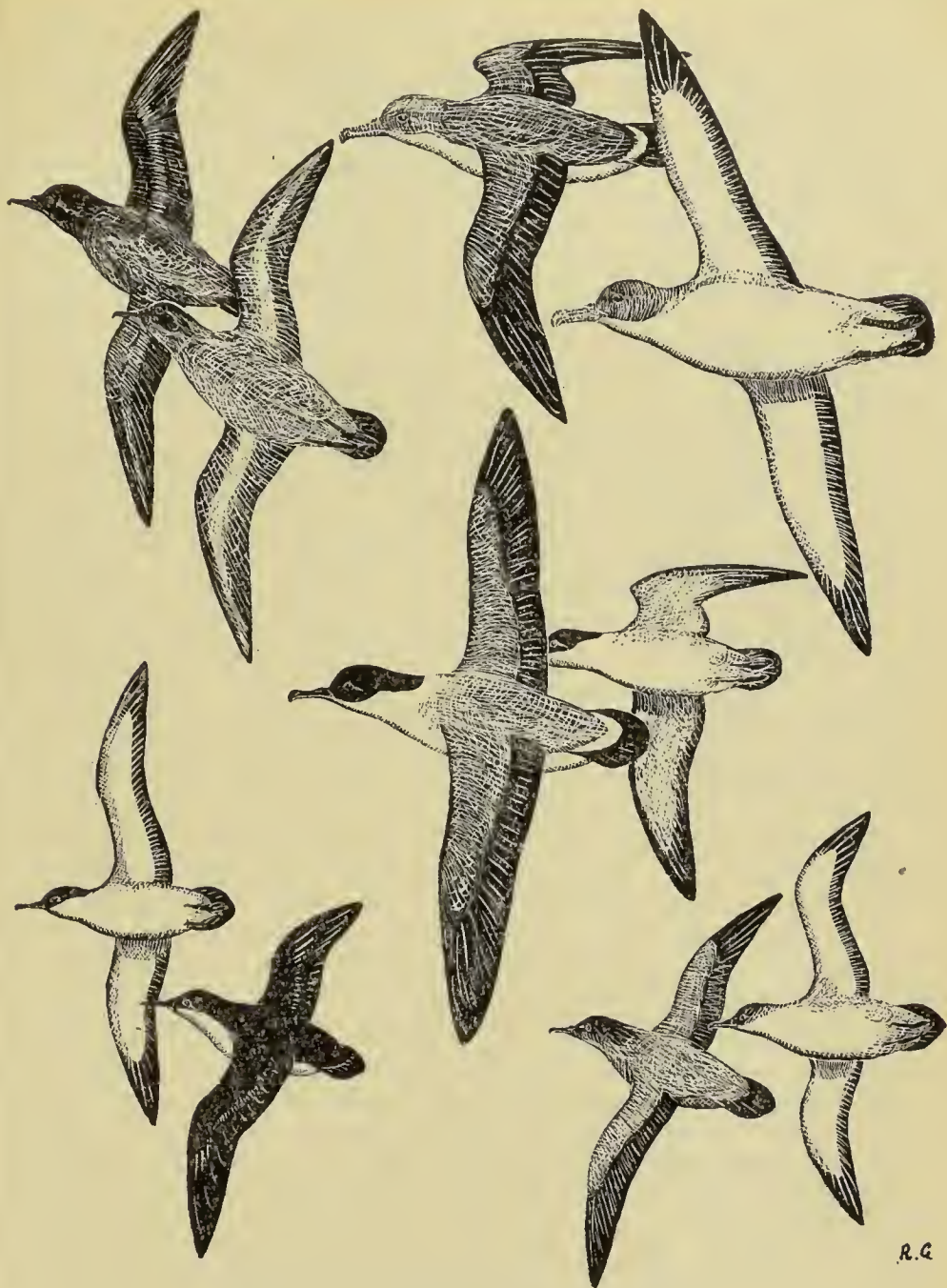
Mauretanicus (Balearic), *pale birds*, more or less white on chin, breast and middle of under-wings but throat more or less clouded with brownish-grey, flanks and belly dirty brownish, axillaries and under-tail coverts more or less sooty, and broad brown trailing edges and tips to under-wings, general effect being that extent of white expanses shown is considerably less than in *Manx*, and except in brilliant light at longish ranges the white tends to look more or less dirty, but brown does not appear in isolated smudges as in Great Shearwater.

In *dark birds* of this subspecies virtually the entire under-parts may appear pale sooty-brown, extreme individuals looking as nearly uniform above and below as a young Starling, when flying above water especially in poor conditions of visibility, which no doubt intensify the effect of dark plumage. M. Mayaud comments (*in litt.*) that he has never examined an actual specimen in which the under-parts were of a darker colour than "whitish washed with brown (*blanchâtre lavé de brun*)", but, apart from differences in appearance of the same bird examined in the cabinet and seen flying at sea, it must be remembered that far too few specimens of *mauretanicus* have been collected to permit confidence that the full range of variation is represented among them. Extreme dark individuals are certainly a smallish minority, but at times several may be seen in company.

Upper-parts.

Manx in autumn almost entirely black or blackish-brown; in spring, some brownish feathers especially on shoulders, mantle and wing-coverts, but brown normally only visible at extremely close range, and no evidence of this subspecies ever looking brown in normal field conditions, although further verification of this point is desirable. Tail also black or occasionally brownish-black from above. Demarcation between blackish plumage and rest is both sharper and higher on the bird than in Balearic, giving *Manx* a whiter appearance as regards sides as well as under-parts than any other regular British shearwater, as well as a blacker appearance above than any except, in some conditions, Sooty.

Mauretanicus (Balearic) in autumn blackish primaries visibly contrasting in good light with brown or brownish-white remainder of upper-parts. Head slightly darker than mantle. At other seasons no black even on primaries, and shade of brown generally paler.



FIELD-CHARACTERS OF SHEARWATERS.

(Upper and under surfaces). Drawn by R. Gillmor.

Top left pair Sooty (*P. griseus*). Top right pair Cory's (*P. diomedea* = *kuhlii*).
 Centre pair Great (*P. gravis*). Lower left pair Manx (*P. p. puffinus*). Lower
 right pair Balearic (*P. p. mauretanicus*), dark example in front, pale example
 behind.

Provided a good view in a fair light is obtained by an observer sufficiently experienced in watching birds at sea an individual of this species can be identified as Manx if the whole of the upper-parts are black or nearly so and the whole of the under-parts pure white with a sharp contrast between them. (This contrast is correctly stated in the text of *The Handbook* but the coloured Plate 95 does not fully convey it, the foreground bird being too brown and smudgy). Identification as *mauretanicus* can be made if the whole of the upper-parts (or all except the crown and wings) show clearly brown (not black or blackish) and if the belly, flanks, axillaries and vent area, if not other parts of the under-surface also, are brown or brownish-white (not pure white). The essential point is that if there are definite patches of brown or brownish-white below, the bird is *mauretanicus*; birds which appear brownish above but whose under-parts cannot be proved to have the diagnostic markings are also probably *mauretanicus* but, until a longer series of skins has been compared, some uncertainty remains whether this character by itself is fully reliable. On the average *mauretanicus* is, and at times appears, appreciably larger than Manx, but this is a marginal character, the wing being at most less than 30 mm longer.

Comparison of this description with that of *diomedea* = *kuhlii* shows that although *mauretanicus* is a much smaller bird (averaging two-thirds of *diomedea borealis* in wing-length), and has a much more brisk wing-action, the two forms have a slight resemblance (so far as the light examples of *mauretanicus* are concerned) in their uniformly brownish upper-parts and less contrasty plumage than either *P. p. puffinus* or *P. gravis*. All three subspecies of *puffinus* however lack the white patch on the tail-coverts usually present in *diomedea*. Prof. V. C. Wynne-Edwards (*in litt.*) describes the white base to the latter's tail as rather narrower than in *P. gravis* and definitely absent from a few birds. A diagnostic character at long range is that *diomedea* differs from *gravis* in being "hooded", not "capped", the greyish-sooty-brown of the head extending down the sides of the neck and throat, while in *gravis* the broad white collar is almost complete round the back of the neck and in the more frequent lighter examples of *mauretanicus* the white of the under-parts extends up to the sides of the neck giving a more streamlined horizontal line of demarcation between the dark upper- and light under-surface. There is no reasonable risk of confusion once it is appreciated that a shear-water with more or less completely brownish upper-parts is not necessarily *diomedea* and that one which appears entirely dusky above and below is not (as most observers have probably assumed) necessarily *griseus* but may be a dark example of *mauretanicus*, which at a distance superficially resembles it except in wing-action and size. (See diagram of field characters p. 49).

This discussion suggests that a re-examination of what we know about shearwater distribution in the Channel and also in the North Sea is called for. The Manx Shearwater has breeding stations at both the northern and southern entrances to the Channel (in the Scillies and near Ushant) and at the North Sea entry in Orkney and Shetland (has bred in Durham) and occurs in some numbers in the Channel and certain parts of the North Sea, such as the Firth of Forth. It is said to have been of normal occurrence off Heligoland up to about a century ago, but to have become a rare vagrant since then.

P.p. mauretanicus is known to occur in some numbers regularly between June and September along most of the French coast of the Channel from Crotoy (Somme) westwards, and the evidence of sight records quoted above indicates that at least in some autumns plenty move across within easy distance of the Cornish and Devon coasts, although the proved occurrences in these waters are surprisingly few, the most recent skins having been obtained in 1875. The status of *mauretanicus* in the North Sea is even more obscure. It has been recorded on the Dutch and Danish coasts and out of 22 shearwaters examined by W. J. Clarke in the Scarborough area between 1890 and 1908 no less than 12 proved to be of this form, between two and four of them being shot in the month of September off Scarborough in four different years (*antea*, vol. ii, p. 207). Clarke, who was a wildfowler, considered it "the commonest Shearwater off the coast of Yorkshire in the autumn, but in his experience it never approaches near the shore and must be sought in the dusk". H. F. Witherby in recording this added "Shearwaters are difficult birds to observe, and the Levantine" (later separated as *mauretanicus*) "has for many years been confused with the Manx Shearwater . . . We hope that Mr. Clarke's observations will induce some of our readers . . . to study Shearwaters". During the forty-three years since these words were written no appreciable progress has been made in clarifying the status of these two forms of shearwater in the North Sea, and in recent years the position has been complicated by a number of problematical sight records from the Thames estuary and other areas. The only certain occurrence on the east coast during the following forty years was one shot sitting amongst Guillemots and Razorbills not more than a mile from the shore at N. Bamburgh, Northumberland, on September 8th, 1921, (*antea*, vol. xv, p. 239). It remains quite possible that the annual movement of *mauretanicus* which Mayaud has traced up the northern coast of France extends up the east coast of Britain to the waters off Yorkshire, Durham and even Northumberland, where in September, 1932, Mr. W. B. Alexander saw some dark shearwaters which may have been of this form, after noting small flocks of entirely dark birds flying rapidly northwards off Seaton Carew, Co. Durham, on November 16th, 1929. If such a move-

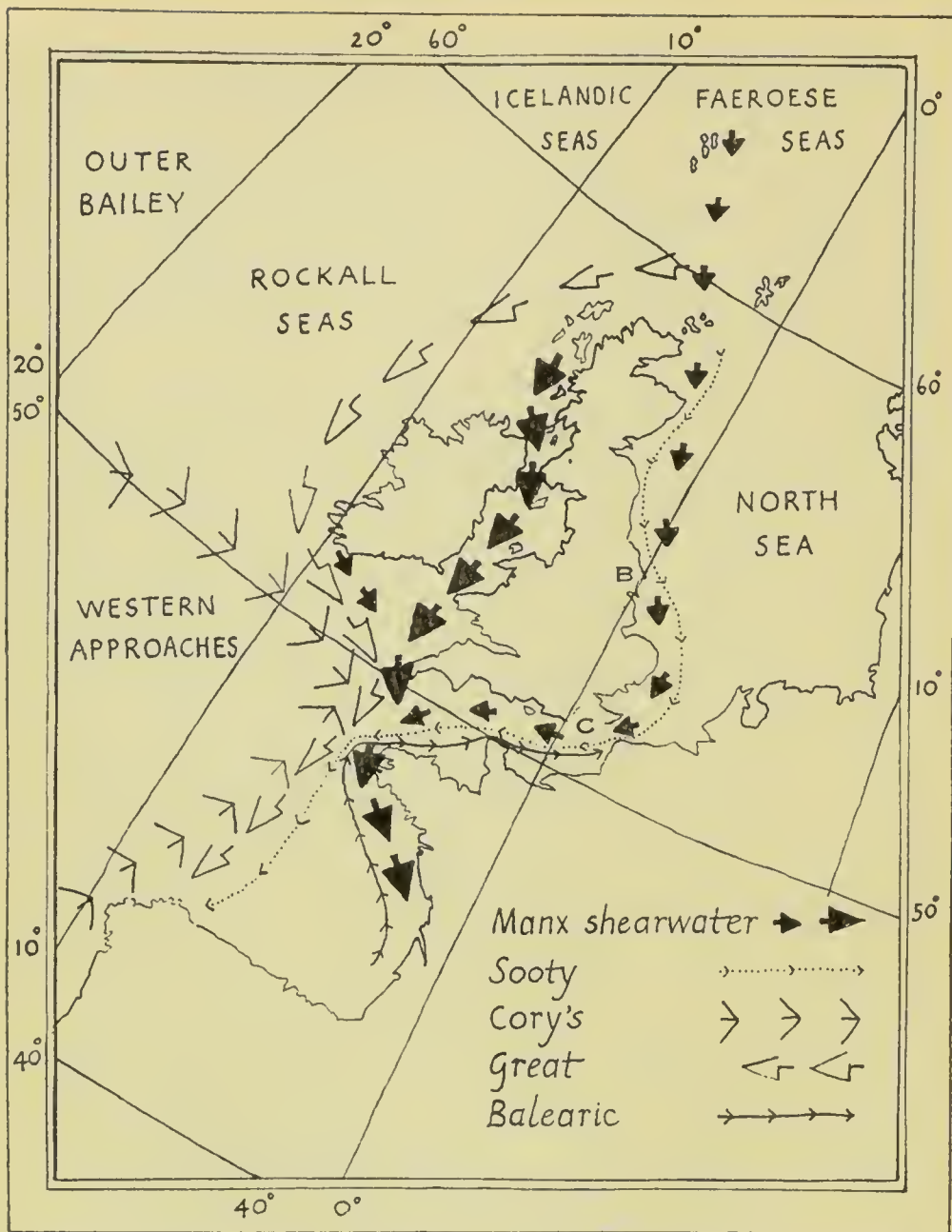


DIAGRAM OF SEA AREAS ROUND GREAT BRITAIN, illustrating principal features of the distribution and movement of shearwaters during the first half of September, so far as at present known. Names of sea areas follow the map of Regions of the North Atlantic in B.T.O. Bulletin No: 36, Jan., 1950, also reproduced in *Proc. Xth Int. Orn. Congress Uppsala, 1950* (in press) and in *Audubon Water Bird Guide* (1950) by R. H. Pough. Arrows represent general direction of underlying movement disregarding daily, short term or local journeys, effects of stormy weather and minor deviations. Except for the Manx Shearwater the number of birds involved is so small and available data are so inadequate that the diagram may well have to be considerably redrawn in the light of fuller study which it is designed mainly to stimulate.

Abbreviations. C—area off which occurred the 3 British specimens of Cory's Shearwater.
B—area off which the majority of British specimens of Balearic Shearwater were secured.

ment continues, the negative evidence of Capt. Wolfe Murray's thorough and prolonged observations over the Dogger Bank and the eastern North Sea (*antea*, vol. xxv, pp. 6-11 and previous references there given) indicates that it is more likely to be traced on the English than on the Continental side of the North Sea.

The evidence for an annual, or at least occasional, late summer movement of *diomedea* into the waters off the Scillies and south-west Cornwall is satisfactory, although still meagre, but it is difficult to feel much assurance over the various sight records of occurrences farther up the Channel of this essentially warm-water species, which seems unlikely to occur otherwise than as a vagrant east of Cornwall except possibly in late August and September.

The Sooty Shearwater (*P. griseus*) undoubtedly has occurred nearly all round the British Isles, but recent surveys have shown that it is remarkably sparingly distributed over the North Atlantic in our latitude and in view of the risk of confusion with dark examples of *mauretanicus*, against which no warning is given in *The Handbook* or other identification books, sight records should be treated with extreme caution.

Finally the Great Shearwater, *P. gravis*, has been shown to be a regular visitor in large numbers to the North Atlantic, including those regions of the ocean off our western shores, but its penetration in the Channel seems to be very limited and in small strength compared with that of the Manx and *mauretanicus*. A very tentative diagrammatic chart of the supposed distribution and movements of shearwaters near Great Britain in early autumn appears on p. 52.

It remains to formulate some of the questions on which further data are required. First, it must be recognised that the basis for sight records will not become unshakeable until a number of additional specimens, particularly of *mauretanicus* have been obtained and critically studied with full data. Nearly all the existing specimens in this country, of which the British Museum Bird Room has eleven, are faded survivals from the days before *mauretanicus* was separated, and they by no means fully represent the different plumages which are known. The easiest area to choose in order to collect more would probably be in the waters south of Jersey, but collecting in the Scillies and the Scarborough area would also be likely to help in establishing the facts, and in relating field descriptions to descriptions of skins. The occurrence of *diomedea* in the Channel in autumn also calls for confirmation by a specimen, not merely washed up on the shore, which would enable subspecific determination to be made.

It would also be helpful if more could be found out about the movement of *mauretanicus* out of and into the Mediterranean, which an observer at Gibraltar should be well placed to check.

Observers on the coasts of Cornwall, Devon, Dorset, the Isle of Wight and other southern and eastern counties would do well to examine most carefully and to make full and immediate field descriptions of any unusual shearwaters, and to take full advantage of any opportunities for offshore searches between the latter part of August and about the end of October. Those travelling across or down the Channel at that season, and especially observers in vessels not bound to follow a particular course can assist by keeping special note of the descriptions, positions, numbers and behaviour of any shearwaters encountered (including Manx) as this information is needed in order to establish further points of distinction or similarity, and seasons or areas of overlapping distribution. Those who have opportunities of flying low in aircraft could also assist in reporting locations of large numbers of shearwaters, as has been shown to be practicable by Rankin and Duffey (*antea*, vol. xli, Supplementary Number, July, 1948, p. 15), even though the species may normally not be identifiable. The weather preceding the appearance of shearwaters is also worth noting. A full study of *mauretanicus* in its Balearic breeding quarters would be of great interest.

Reliable sight identification of the various shearwaters at sea round the British Isles is certainly possible, but before it can be generally established more material and knowledge and experience must be gathered, and in our present state of ignorance it is no use pretending that the same reliance can be placed on such sight records as on those of land birds for which immeasurably more data and better opportunities of close, sustained comparative observation are usually available. The compilation of definitive field-descriptions and distributions of the shearwaters occurring around our coasts will fill the last great gap in the basic elementary material of British ornithology, and it is to be hoped that this task which has been postponed so long will soon be tackled and completed. While hasty, speculative and dogmatic identifications of shearwaters on insufficient evidence only add to the confusion, cautious descriptions and information about unidentified individuals or flocks may, when related to other data, prove of some value.

In conclusion I must express my great indebtedness to Mr. R. M. Lockley and Professor V. C. Wynne-Edwards for their most valuable and expert help both in the searches at sea and in criticising and adding to this paper; to Mr. Noël Mayaud for criticising it from his unequalled experience of *mauretanicus*; to Messrs. W. B. and H. G. Alexander and P. A. D. Hollom for their valuable criticisms and field notes covering in each case Mediterranean as well as British observations; to Lt.-Col. H. G. Hasler, D.S.O., for his unfailing patience and kindness and superb seamanship in searching the Channel for shearwaters; to the Board of Admiralty and to Lt.-Cdr. Hammond and the ship's company of H. M. S. *Fort York* for the initial 1946 reconnais-

sance; to Mr. Robert Gillmor for preparing the diagrammatic illustrations of field characters on p. 49 and to Miss J. H. Lidderdale for the map diagram of shearwater distribution and movements on p. 52.

The following references should be added to those given as they occur in the text:—

INGRAM, COLLINGWOOD. (1926). *Birds of the Riviera*, p. 106.

MAYAUD, N. (1931). "Contribution a l'étude de la mue des Puffins." *Alauda* Series ii: 230-249.

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THE DISTRACTION DISPLAYS OF THE LITTLE RINGED PLOVER AND TERRITORIAL COMPETITION WITH THE RINGED PLOVER.

BY

EDWARD A. ARMSTRONG.

THE distraction displays of the Little Ringed Plover (*Charadrius dubius*) bear a general similarity to those of the Ringed Plover (*Charadrius hiaticula*) (Williamson 1947) and Kentish Plover (*Leucopoliis alexandrinus*) (Simmons 1951). The following observations are based mainly on the behaviour of a pair with small chicks in East Anglia. It was not possible to study the forms of display throughout the nesting cycle so these notes are necessarily incomplete. As the behaviour of the birds with the brightest plumage was consistent with their being males they are referred to as such.

The principal display-patterns observed were (1) the crouch-run, (2) the squat and (3) injury-simulation. The sense in which "injury-simulation" is used is indicated elsewhere (Armstrong 1949).

(1) THE CROUCH-RUN.

The first reaction to an intruder of a bird on the ground consisted of running away with the body held low. It was most characteristic of the female. As performed by some other waders this has been styled the "rodent-run" (Williamson 1950).

Although Selous (1927), writing of such behaviour by the Kentish Plover, describes the bird as looking rather like a rat the term "crouch-run" used by Simmons when referring to this species seems more suitable as it avoids raising the question of the degree of similarity between the appearance of bird and mammal. The Golden Plover (*Pluvialis apricaria*) and, to a rather lesser extent, the Ringed Plover, and even less the Little Ringed Plover, act during the crouch-run in such a way that one has the impression that the bird is being inconspicuous conspicuously! Their behaviour seems to be, not simply retreating in the manner best adapted to evade observation, as a Corn-Crake (*Crex crex*) will run with head and neck depressed through low herbage looking like a small quadruped, but a form of distraction display. A little evolutionary modification may transform escape movements into diversionary activity. It is perhaps, impossible to make a rigid distinction between behaviour such as the Corn-Crake's, which is purely an escape reaction, and the crouch-run by other species which functions as distraction display, but during the latter the bird is apt to appear occasionally where inequalities in the ground would enable it to remain concealed and to look around from time to time. As the term "mobile lure-display", used by Simmons to describe another form of display, would include the crouch-run and other types of behaviour its employment in this connexion is ambiguous and confusing. Similarly his term "static lure-display" does not aptly denote the incapacity-simulation display which he describes nor discriminate it from other forms of display to which it might be applied.

(2) THE SQUAT.

After running a short distance either male or female may squat, but the male's attitude is peculiar, for his head and body are held low but his stern is often raised and he is apt to make odd little shifting or turning movements. The male Ringed Plover performs in a similar way, as shown in one of my photographs (Armstrong 1950b). It is difficult to decide whether the net effect is to conceal the bird or render him more conspicuous as much depends on the nature of the terrain. The posture seems to be distinct from displacement-brooding though it bears some superficial resemblance to it. Probably it has a threat function. A crouching attitude when menaced is characteristic of many birds.

(3) INJURY-SIMULATION.

After the crouch-run the Little Ringed Plover commonly squats, frequently in a hollow or rut, and begins flicking its wings; first a quick wing-flip, then another, gradually warming up to realistic injury-simulation with first one pointed wing raised high, then the other, and so on, sometimes spread-eagled with both wings on the ground. Neither of the birds was seen to flounder forward,

then pause with flapping wings and flop with both wings outspread as a Ringed Plover, disturbed at the nest, will do, though a wing-flip or two may precede the performance. Like the Ringed Plover the Little Ringed Plover manages to keep an eye on a human intruder while engaged in this form of distraction display. When I was the occasion of it the display was never enacted nearer than 25 yards. Although the bird rendered itself highly conspicuous, exposing a remarkable amount of white plumage and constantly uttering clinking notes, yet at this distance a mammalian predator probably would not have seen it and a human spectator without binoculars could scarcely have recognized it. When the bird performed in a hollow the under-side of the expanded tail was exposed. The dark markings on the white feathers constituted a strikingly conspicuous and beautiful pattern.

This incapacity-display sometimes continued for a minute or longer while the bird spasmodically flapped in the chosen hollow; then it would run on and start performing again. I have not noticed such prolonged injury-simulation in one spot by a Ringed Plover.

A fragment of epigamic display was seen. With tail fanned the male flew near to where the female was feeding and uttered a high, sweet trill before alighting.

As an incidental matter of interest it may be mentioned that one bird was seen to spend some minutes pecking at a large dragon-fly.

TERRITORIAL RELATIONS BETWEEN LITTLE RINGED PLOVER AND RINGED PLOVER.

There was constant quarrelling between the Little Ringed Plovers and the male of a pair of Ringed Plovers. The latter frequently flew near to the Little Ringed Plovers and often both the smaller birds would fly at him. There would be a flurry of fawn and white plumage, but in spite of the vicious darts made at him it is doubtful whether he was ever actually struck. At the height of these attacks the Little Ringed Plovers uttered a high chirruping or hinny—apparently a higher-pitched version of the whistle which Ringed Plovers utter when attacking. On such occasions the threat display of the Ringed Plover consisted of fluffing the feathers on head, neck and breast while the body was held at a slight angle, the wing opposite the Little Ringed Plover being somewhat raised and the partly-expanded tail held rather obliquely so that its markings were visible to the attacker approaching from the side. The tail was not depressed acutely or trailed as in the injury-simulation display and, sometimes, during threat display. The posture bore a vague resemblance to the beginning of injury-simulation. The Little Ringed Plovers also enlarged their contours by fluffing the white plumage, including the body feathers.

I have suggested (1950 c) that the injury-simulation of the Ringel Plover and Killdeer (*Oxyechus vociferus*) incorporate elements from the threat and courtship displays. Probably this is also true of the Little Ringed Plover's injury-simulation display.

Sometimes the male Ringed Plover would pursue the (presumed) male Little Ringed Plover by stages, though the procedure was more like following than pursuing. When the Ringed Plover alighted the Little Ringed Plover would squat a few feet ahead, the Ringed Plover would run past a foot or two and the smaller bird would again run ahead, perhaps giving a flip of his wings, and squat again. So they would proceed until they reached the boundary of the Little Ringed Plover's territory; then the latter would fly back with the Ringed Plover in pursuit and the procedure would begin all over again. Once during this curious progress, when the Ringed Plover was obviously in a state of tension, he raised and shook his plumage—a common displacement-activity in this species (and others) (Armstrong 1950a). Immediately the Little Ringed Plover, which had been squatting, flew at him.

Sometimes during these territorial disputes the Little Ringed Plover's squatting developed into injury-simulation, either a mere a-synchronous flipping of the wings or the full performance 2-3 feet from the Ringed Plover. The latter would follow and the Little Ringed Plover would move on, creeping, crouching and injury-simulating until the boundary was reached and the birds returned. The male never did anything more interesting than squat when I approached him.

Two days later the Ringed Plover, which had then three small chicks, was frequently seen chasing the Little Ringed Plover in flight, sometimes flying around the area in which both families fed for more than five minutes at a time. They flew fast, the Ringed Plover following every dart and swerve of the Little Ringed Plover. Once when both had alighted the male Little Ringed Plover squatted but the Ringed Plover dashed at him before he could begin his incapacity-display. The Little Ringed Plover was silent most of the time during the chase but occasionally uttered whistling notes. A chittering call was also heard, apparently emanating from this bird.

In spite of this continual friction, which occupied a great deal of the birds' time, the Little Ringed Plover reared young successfully, and doubtless the Ringed Plovers were also successful. Thus the situation provided an illustration of territorial altercations between closely related species with somewhat similar ecological preferences, one larger and more powerful than the other with the advantage of being resident and so of being able to establish territory before the other arrives, the other a smaller summer visitor, yet neither succeeding in preventing the other

competitor from breeding.* However, a few hundred yards away the relationship between the two species was puzzling. In a Little Ringed Plover's territory there was an apparently deserted clutch of three Ringed Plover's eggs, yet there was no sign that the Little Ringed Plovers had eggs or young. Once or twice they both flew around high up as if the male was chasing the female.

Both sexes of the breeding pair of Little Ringed Plover acted sentinel, but the male appeared to spend more time acting in this capacity than his mate. He would spend as long as 15 minutes on the look-out perched on his right leg on a vantage-point, but his alertness may have been accentuated by the state of tension which existed between the two species.

Ringed Plovers will shelter their fledged young under their bodies as they perch on the ridge of a shingle bank or hillock where they can have a wide view and perceive approaching intruders; this appears to be the customary way for an adult with small chicks to spend the night. The manner in which Little Ringed Plovers were seen with chicks around them on a shingle bank suggests that they may roost in the same way.

SUMMARY.

Forms of display by a pair of Little Ringed Plover with chicks are described and an account is given of territorial altercations with a Ringed Plover, which did not prevent successful breeding.

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*Mr. K. E. L. Simmons has drawn my attention to the observations of S. Durango (*Fauna och Flora*, 1943: 145-154) who gives two records of Ringed Plovers taking over Little Ringed Plovers' nests containing two eggs and laying their own c/4 in them,

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XXXVI. THE NUTCRACKER.

Photographed by P. O. SWANBERG.

(Plates 13-20).

WE are grateful to Mr. Yeates for securing for us a series of photographs of the Nutcracker (*Nucifraga caryocatactes*) taken by Mr. P. O. Swanberg who has devoted a great deal of time to the study of this species over the past ten years. With one exception all the pictures show the Thick-billed form (*Nucifraga c. caryocatactes*) of which there have been rather fewer authentic occurrences in Britain than of the Slender-billed (*N. c. macrorhynchus*) shown on Plate 18 (lower). The latter is liable to occur in "irruptions" which bring it into Europe—and sometimes to Britain—from its breeding quarters in Siberia. The irruption of 1950 was apparently on quite a small scale at Ottenby in Sweden and did not produce many authentic British records; it may, however, be noted that an account was published in *The Field* for June 16th, 1951 (vol. 197, p. 962) of a pair of Nutcrackers seen feeding a young bird at Scotton, near Knaresborough, Yorks, during May, 1951. This record, which was accompanied by evidence for identification, has been investigated by Mr. Ralph Chislett who informs us that he regards it as "non-proven", a verdict with which we concur. It is most unfortunate that Mr. Chislett was not informed of this occurrence until some weeks had passed, during which the birds disappeared and the opportunity for confirmation by an experienced ornithologist was thus lost. We are grateful to Mr. Chislett for information on this matter and for passing on to us a record which appears in this issue. Apart from this record from Leeds there seems to be only one record for Britain since the war (*antea*, vol. xli, p, 149).

It may be worth emphasising that the Nutcracker is not simply a "brownish bird, speckled with white" and that some "Nutcrackers" reported may be aberrant Rooks (*Corvus frugilegus*) with brown or "rusty" plumage. In fact, as Mr. Swanberg points out, one of the most conspicuous features of the species is the white under tail-coverts and the broad white border to the under-side of the tail, formed mainly by the outer tail-feathers. This feature is particularly well shown in Plates 13, 17 and 20. From above only a narrow border, formed by the central feathers, is visible on the closed tail (Plate 18 upper). Another field character, the breadth of the wings, is well brought out in Plate 17.

Mr. Swanberg's photographs—notably Plates 13 and 16 (Right)—also record some of the characteristic habits of the bird. In Sweden the species feeds principally on hazel-nuts which it stores



THICK-BILLED NUTCRACKER (*Nucifraga c. caryocatactes*).
THE HABIT OF PERCHING ON THE TOPMOST SHOOT OF A CONIFER IS
CHARACTERISTIC AT MOST TIMES OF THE YEAR. BILLINGEN, NEAR
SKARA, CENTRAL SWEDEN, MARCH, 1944.
(Photographed by P. O. SWANBERG).



THICK-BILLED NUTCRACKER (*Nucifraga c. caryocatactes*).

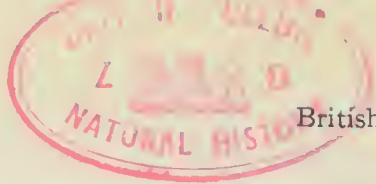
AT THE NEST IN A SPRUCE TREE. THE YOUNG ARE 13 DAYS OLD. CENTRAL SWEDEN, MAY 14TH, 1944.
(Photographed by P. O. SWANBERG).



THICK-BILLED NUTCRACKER (*Nucifraga c. caryocaiactes*).

IT IS COMMON TO SEE SNOW ROUND THE NEST RIM EARLY IN THE BREEDING SEASON.
THIS BIRD IS BROODING YOUNG 6 DAYS OLD. CENTRAL SWEDEN, MAY 7TH, 1944.

(Photographed by P. O. SWANBERG).



LEFT: FEEDING THE YOUNG, 12 DAYS OLD, BY
REGURGITATION.

CENTRAL SWEDEN, MAY 6TH, 1945.

(Photographed by P. O. SWANBERG).



RIGHT: HEADLONG DIVING WITH WINGS CLOSED IS AS
CHARACTERISTIC A HABIT AS PERCHING ON THE VERY
TOP OF A TREE. CENTRAL SWEDEN.



THICK-BILLED NUTCRACKER (*Nucifraga c. caryocatactes*),
WITH A LOT OF HAZEL NUTS IN THE THROAT POUCH AND ONE IN THE BILL.
CENTRAL SWEDEN, MARCH 11TH, 1951.
(Photographed by P. O. SWANBERG).



UPPER : THICK-BILLED NUTCRACKER (*Nucifraga c. caryoctactes*).
WITH THE SPECIAL WINTER FOOD, HAZEL-NUTS. CENTRAL SWEDEN.

LOWER : SLENDER-BILLED NUTCRACKER (*Nucifraga caryocatactes
macrorhynchos*).

AN "INVADER" IN THE AUTUMN OF 1950, THIS BIRD WAS ATTRACTED TO A
BIRD-TABLE AT LJUSNE, 135 MILES NORTH OF STOCKHOLM, SWEDEN, AND
WINTERED THERE. PHOTOGRAPHED MAY 25TH, 1951.

(Photographed by P. O. SWANBERG).



THICK-BILLED NUTCRACKER (*Nucifraga c. caryocatactes*).

LEFT : ALIGHTING IN THE SNOW WITH NUTS IN THROAT POUCH.
CENTRAL SWEDEN, MARCH 27TH, 1951.

RIGHT : ASCENDING WITH NUTS IN THROAT POUCH.
CENTRAL SWEDEN, MARCH 27TH, 1951.
(Photographed by P. O. SWANBERG).



THICK-BILLED NUTCRACKER (*Nucifraga c. caryocatactes*),
HACKING A CONE OF *Pinus cembra* PRESENTED BY THE PHOTOGRAPHER. THIS
WILD BIRD, A MALE, WEARS ONE ALUMINIUM AND TWO COLOURED RINGS FOR
IDENTIFICATION. CENTRAL SWEDEN, MARCH 18TH, 1951.

(Photographed by P. O. SWANBERG).

in the ground in its territories in the pine woods. Reference to food-hoarding by Rooks is made elsewhere in this issue, but to the best of our knowledge this habit has been much more fully developed by the Nutcracker. An account of Mr. Swanberg's observations on this point is, we understand, to be published in the *Proceedings of the X International Ornithological Congress* and a brief reference to his work has appeared in *The Countryman* (vol. xlii, p. 171).
J.D.W.

THE LITTLE RINGED PLOVER IN GREAT BRITAIN IN 1950.

BY
E. R. PARRINDER.

IN 1950, the Little Ringed Plover (*Charadrius dubius*) nested in England for the seventh year in succession. The breeding population showed little change from 1949 (see *antea*, vol. xliii, pp. 279-284); proof of nesting was obtained for twenty pairs and at least eight other pairs spent the summer and possibly bred. Gravel pits were again the most favoured habitat, but several pits, where nesting had occurred in previous years, had become unsuitable and some fresh pits were occupied. Little Ringed Plovers bred for the first time in Surrey and in Derbyshire. The nest in Derbyshire was on a shingle bank in the River Trent; this is the first time in England that the species has been known to use this habitat, a common one in parts of its Continental range.

As the Little Ringed Plover increases and spreads it is seen more frequently on passage at reservoirs, sewage farms and other places adjacent to its breeding haunts. To save space, and the account from being tedious, these occurrences are not included below—most of them have been (or will be) published in the appropriate local reports. Away from counties where they also nested, Little Ringed Plovers were seen in Dorset (first occurrence: two at Radipole Lake, Weymouth, on May 3rd, Miss M. D. Crosby *per* K. B. Rooke); Northamptonshire (one at Ecton Sewage Farm on August 5th and 20th, *per* R. Felton); Norfolk (Salthouse, one on May 2nd and 3rd and on September 6th, 11th and 13th, *Wild Bird Protection in Norfolk*, 1950, p. 11, and C. C. Rose; Cley, one on August 18th, 19th and 21st and on September 11th, *ibid*, p. 13, and W. H. D. Wince; Blakeney Harbour, one on September 8th, C. C. Rose) and Cambridgeshire (one at Cambridge Sewage Farm on May 8th, 10th and 18th, *Report of Cambridge Bird Club*, 1950, p. 21).

I am grateful to the observers named in the text, and to the members of the London Natural History Society, too numerous to mention individually, who supplied details for Middlesex and the other counties within the London Area.

I am now compiling an account of the occurrences in 1951 and I should be glad to receive records of nesting, or of birds seen on passage. These should be sent to me at 27, Gwalior House, Chase Road, Southgate, N.14.

SUSSEX.

Four pairs bred. Birds were first seen on the nesting ground (same general area as in 1948 and 1949) on April 16th and three pairs hatched young which in two cases certainly reached the flying stage. A fourth pair at a new site about four miles distant also brought young to the flying stage.

On April 19th one was seen to fly in over the sea wall near the Midrips and thence inland, calling.

The latest occurrence in Sussex was on September 30th, when one was seen at Rye Harbour. (*The Sussex Bird Report*, 1950, p. 22, and G. des Forges).

KENT.

Three pairs bred at the pit where nesting was first noted in 1949. The first occurrence was on April 12th. Two nests, one with three and the other with four eggs, were found on May 21st and a third pair was seen on the same date. On June 11th and 18th the two pairs with nests had young; the nest of the third pair was not found until July 24th, when it contained one egg and a newly hatched chick. The last occurrence at the site was on August 20th (L. E. Batchelor and E. H. Gillham).

SURREY.

One pair bred—the first nesting record for the county. A Little Ringed Plover was seen at a gravel pit on July 8th and a nest found the next day on a clinker dump. The three eggs were intact on July 13th, but unfortunately the site was not visited subsequently (E. G. Pedler).

ESSEX.

Four pairs certainly, and two more possibly, spent the summer at Locality "A". The first bird was seen on April 2nd. A nest with two eggs found on April 22nd had four eggs on May 7th; lack of observation prevented proof of the breeding of the other pairs being obtained (A. E. Jolley, E. R. Parrinder).

The gravel pit, Locality "B", where four pairs probably bred in 1949, has been flooded and is now unsuitable for nesting; a single bird was seen there on May 6th and 21st, June 11th and 19th and July 7th (O. J. H. Davies, D. A. T. Morgan).

HERTFORDSHIRE.

Up to two birds were seen at each of three gravel pits in the breeding season, but breeding was not proved, or suspected.

MIDDLESEX.

A pair nested at each of four gravel pits (one more than in 1949) and, as in 1949, nesting may also have occurred on London Airport.

At Locality "E" (where Little Ringed Plovers have bred since 1947) a pair was seen on April 16th; the nest was not found but the adults were seen with two chicks on May 28th.

At Locality "F" (bred 1948 and 1949) four birds were seen on April 9th; one pair stayed the summer but proof of breeding was not obtained until July 29th, when a chick was seen with one of the adults.

At Locality "G" (bred 1949) two were seen on April 16th. A nest with one egg found on May 14th contained two on May 17th; this appears to have been the complete clutch and the two eggs were still being incubated on June 4th. On June 21st the area was found to have been rolled and the nest had disappeared. But six birds (some of which may have been juvenile) were seen on June 24th and their behaviour suggested that the young may have escaped destruction.

At Locality "L" (a new site) two birds were seen on April 15th and on June 4th an adult was seen with three chicks—their subsequent history is not known.

Perry Oaks sewage farm and the shingle banks of the R. Colne on Staines Moor were again used for feeding; Little Ringed Plovers were seen at both places on many dates between April 1st (Staines Moor) and October 3rd (Perry Oaks sewage farm—a late date). Occasional birds were seen at the Staines and Brent reservoirs and at West Kempton one-three stayed from April 7th until June 3rd, when the water level was raised.

BERKSHIRE.

Two pairs nested, one at Locality "A" (for the first time since 1947) and the other at Locality "B", where nesting was first recorded in 1949.

At Locality "A" the first bird was seen on March 25th—an early date. Nesting was confirmed when a chick about one day old was found and photographed (*per* A. C. Fraser).

At Locality "B" two birds arrived together on April 1st. A nest with three eggs found on May 16th held four eggs on the following day, but on May 19th only yellow stains and a few fragments of shell could be found. The nest had probably been stepped on by a workman, but its destruction sooner or later was inevitable as it was sited in the path of, and not many yards from, a mechanical excavator. No further attempt at nesting was observed. Another bird defended a territory some two hundred yards away and a fourth bird was occasionally seen in this territory, but no nest was found. All four birds had left the site by early July.

A single bird was seen on May 20th at another gravel pit, where there are suitable nesting sites (*per* C. E. Douglas).

BUCKINGHAMSHIRE.

A Little Ringed Plover was seen at the 1949 breeding site from April 24th to May 11th, but not subsequently (J. Field).

SUFFOLK.

Only one pair of Little Ringed Plovers was proved to breed in Suffolk in 1950; three birds were seen at Locality "B" in May and a nest, with four eggs, found on May 29th; the nest was still intact on June 15th, but its subsequent history is not known (P. D. Kirby).

Three birds were seen at Locality "A", Minsmere Level, on May 7th but none subsequently (*Report of R.S.P.B.*, 1950, p. 20); four were found on a small grazing marsh farther up the coast on May 16th and two at the same place on May 17th and 18th. One (or two) were seen by Easton Broad on June 26th (P. D. Kirby, A. E. Vine, P. Westall).

DERBYSHIRE.

The first occurrence of the Little Ringed Plover in Derbyshire was on May 30th, 1950, when two were seen by members of the Repton School Field Club on a shingle bank of the R. Trent; subsequently a nest was found which held three eggs on June 3rd and four on June 5th. Two eggs had hatched on June 28th and a third hatched the following day; the fourth egg did not hatch. It is not certain if any of the chicks reached the free-flying stage and no birds were seen after July 20th (Peter Gordon *et al.* *per* W. K. Marshall, see also *Orn. Rec. for Derbyshire*, 1950, pp. 116-117).

YORKSHIRE.

Three, probably four, pairs nested at the site where breeding first occurred in 1948. Eggs were seen of two pairs; young of three pairs; another pair behaved as if with young. Fledged young were seen for the first time (*Y.N.U. Committee for Orn. Rep.*, 1950, p. 71).

THE INDEX OF HERON POPULATION, 1951.*

BY

W. B. ALEXANDER.

(Edward Grey Institute, Department of Zoological Field Studies, Oxford).

THE number of heronries on which reports for 1951 were received at the Edward Grey Institute was 190 or 17 fewer than in the previous year. Of these 140 were in England, 11 in Wales, 15 in Scotland and 24 in Ireland.

The Rev. P. G. Kennedy has again supplied figures for 19 heronries in 9 counties of Eire, G. des Forges for 8 in Sussex, A. G. Parsons for 6 in Cornwall and R. G. Pettitt for 6 in Norfolk.

*A publication of the British Trust for Ornithology.

Counties or larger areas from which particulars of all known heronries have been received include Cheshire and S. Lancashire (from A. W. Boyd), Staffordshire, Worcestershire and Warwickshire (from C. A. Norris), Cambridgeshire, W. Norfolk and W. Suffolk (from A. E. Vine), Huntingdonshire (from C. F. Tebbutt), Bedfordshire (from K. Piercy), Essex (from G. A. Pyman), Dorset (from J. R. M. Tennent) and Glamorgan (from R. F. C. Zamboni). The writer has collected data for all known heronries in the Thames drainage area with the assistance of members of the Oxford Ornithological Society and the Middle Thames and London Natural History Societies.

Four heronries hitherto unrecorded have been reported. One in Tipperary with 16 nests reported by S. C. Finch-Davies and one in Tyrone with 5 nests reported by Miss M. F. Burges are both said to be ancient. One in Arran with 3 nests reported by A. M. Grogan and one in Caernarvonshire with 2 nests reported by L. N. Larsen have both been in existence for at least 10 years.

As explained in previous reports of this series it is considered that the most reliable method of obtaining an index figure for the year is to compare the number of nests in those heronries counted in 1951 with the average number in the same heronries in years when the Heron population was standard (1928, 1936, 1937, 1938 and 1939). We have such averages for the standard years for 128 of the heronries counted in 1951 and these total 2,731 nests. In 1951 the same heronries contained 2,721 nests or almost exactly 100 per cent. As the percentage in 1950 on this basis was 91 this gives an increase in the breeding population of 10 per cent.

Another method of estimating the change is by comparison of the numbers of nests in 164 heronries which were counted both in 1950 and 1951. In 1950 these totalled 2,887 nests and in 1951, 3,185. This gives an increase of 10 per cent., which would be equivalent to an index of 101. Judged by either of these samples therefore the population is now back to standard for the first time since 1939.

The winter 1950-51 was again, on the whole, a mild one; at least in England. Mr. J. H. Willis kindly informs us that the coldest month at Norwich was December, 1950, with a mean temperature of 33.5°F., and that this was the coldest December for 50 years, with snow on the ground most of the month. But January and February were unusually mild. Thus after four mild winters the Heron population has at length recovered from the effects of the severe winter of 1946-47.

Though this is the average condition in the British Isles as a whole the accompanying table shows that the position is not the same in all parts of the country. The samples for some of the areas are comparatively small and it is probably unwise to place any reliance on changes of less than 10 per cent. Ignoring smaller figures we see in the last column that in all regions of

England and Wales, except the North-east, there was an increase of from 10 to 18 per cent. on the previous year, that in Scotland and Ireland there was little change, and that in North-east England there was a decrease of 10 per cent.

From the fourth column we see that in Eastern and North-east England the population is still more than 20 per cent. below standard, that in South-east England, the Midlands, Wales, North-west England and Scotland the population is approximately standard, and that in South-west England, the Thames Valley and Ireland the population is now from 11 to 22 per cent. above standard.

The above conclusions are based on all counts of individual heronries in each region that we have received and it is probable that in some cases the sample is not properly representative. Comparison of the populations of areas in which all known heronries were counted in 1951 with populations found in the same areas in similar previous counts are in some ways more satisfactory. It must be borne in mind however that it is never possible to be sure that such counts are complete since there is ample evidence that heronries of considerable size have frequently remained for many years unknown to ornithologists.

The comparison of the populations of areas in which all known heronries were counted in 1951 with those found in the surveys of the same areas in 1950 and in 1928 is shown in the table below. It will be seen that in all these areas except the West Midlands and Dorset there has been an increase since the previous year, and that in all the areas but Essex, Dorset and Glamorgan the population is now considerably larger than in 1928.

<i>Area.</i>	<i>No. of nests (and of heronries).</i>		
	1951	1950	1928
Cheshire and S. Lancs.	269*(7)	229*(8)	170(6)
Staffs., Worcs. & Warwick	229*(9)	233(9)	174**(11)
Hunts., Beds., Cambs., W. Norfolk and W. Suffolk	360(15)	298(18)	206**(10)
Essex	157***(13)	151***(12)	223(7)
Thames Drainage Area	405(16)	356**(17)	241***(13)
Dorset	88(3)	96(3)	137(3)
Glamorgan	18(2)	14(2)	20(2)

Total for sample areas in England and

Wales	1,521(65)	1,371(69)	1,164(52)
	+5 nests	+6 nests	+7 nests

* =Single nest included in the total but not counted as a heronry.

In conclusion we must again thank all those whose co-operation has made this report possible and ask all readers who can obtain figures of occupied nests in heronries in 1952 (preferably between April 15th and May 10th) to send the information as soon afterwards as possible to the writer at the Edward Grey Institute, Department of Zoological Field Studies, Botanic Garden, Oxford.

	<i>Comparison with standard.</i>		<i>Comparison with previous year.</i>		
	<i>No. of heronries</i>	<i>Average in standard years 1928-39</i>	<i>Percentage change 1951</i>	<i>No. of heronries</i>	<i>Percentage change 1951</i>
South-west England ...	17	318	+11	18	+11
South-east England ...	11	369	+5	10	+10
Thames Drainage Area	15	299	+22	19	+12
Eastern England ...	21	585	-21	30	+18
Midlands ...	17	437	-3	20	+13
Wales and Borders ...	8	100	-5	10	+16
North-west England ...	11	328	+5	14	+17
North-east England ...	7	110	-25	9	-10
Scotland ...	6	55	+9	13	-5
Ireland ...	15	130	+19	21	-7
England and Wales ...	107	2,546	-2	130	+13
British Isles ...	128	2,731	0	164	+10
		2,506		2,540	
		2,721		2,887	
				2,860	
				3,185	

NOTES.

Rooks hiding pine cones and other food.—The publication (*antea*, vol. xliv, p. 202) of a record of Rooks (*Corvus frugilegus*) apparently hiding pine cones has brought in several further notes on this subject. Lord David Stuart, on several occasions in October, 1943, saw Rooks burying pine cones in a grass field at Novar, Ross-shire. Mr. K. Mackay reports that "Rooks come each year on one or at most two days in early October and wrench the young cones off a pine tree in the plantation at Torpichen, West Lothian. The Rooks carry away the cones but return quickly for another." More extensive food-hoarding is reported by Mrs. F. M. Neill Watson from Greystones, Co. Wicklow, where she has seen a Rook bury pieces of food, especially old crusts of bread, in the ground and subsequently dig them up, either for itself or for its young.

Nutcracker in Yorkshire.—At 7.05 (B.S.T.) on April 27th, 1951, two birds alighted on the chimney pot of the house opposite mine at Beeston, Leeds. They appeared to be in an exhausted state, remaining huddled together and motionless for about ten minutes before taking to flight again. Good views were obtained from a distance of about 60 feet, through 10 x 50 binoculars and x 25 telescope, in very good light. In general appearance the birds were "corvine" and were about one foot in length, judging from a semi-domesticated pigeon perched near by. The plumage was chocolate-brown, heavily streaked and spotted with white on breast, mantle and head—except the crown which was uniform; one of the birds showed some grey round the base of the beak. The under tail-coverts were white, but were seen only when the birds were in flight. The wings were broad and black in colour. The tail was somewhat short for the size of the birds and was black tipped with white. The bill, a conspicuous feature, was long, slender and pointed, and black in colour; legs and feet appeared black. No call was uttered. The birds were evidently Nutcrackers (*Nucifraga caryocatactes*). K. DAWSON.

Unusual nesting-place of Chaffinch.—Mr. Roy Crossley reports that on June 18th, 1951, at an R.A.F. camp in north Gloucestershire, he was shown a nest of a Chaffinch (*Fringilla cœlebs*) built against the wall of a billet. Over the door of the billet was a wooden wireless mast, supported by two wooden blocks. The top block was some six inches below the projection of the roof and it was on this that the birds had built their nest; it contained four eggs on June 24th and July 1st, but was empty on July 15th.

House-Sparrows attacking Swallows.—Mr. Alec Butterfield reports that in August and September, 1950, at North Dalton, E. Yorks, he saw a House-Sparrow (*Passer domesticus*) frequently attacking Swallows (*Hirundo rustica*) perched on electric light cables.

The sparrow began by flying up to the wires at one end of the line of perched Swallows; this usually caused several Swallows to leave the wire. The remaining Swallows were dislodged a few at a time by the sparrow sidling up to them, or, if necessary, flying at them from in front and below. Mr. Butterfield never saw more than one sparrow thus engaged at any one time, but cannot say whether more than one individual was involved. He observed similar behaviour at Spurn Bird Observatory in August, 1950. It may be noted that the attacks described by Mr. K. E. L. Simmons (*antea*, vol. xlv, pp. 369-372) were evoked by flying not stationary birds.

Swallows and House-Martins alighting on the ground to feed.—The publication (*antea*, vol. xlv, p. 65) of a record of Swallows (*Hirundo rustica*) and House-Martins (*Delichon urbica*) alighting on the ground to feed has elicited several further records of this behaviour. Mr. Alec Butterfield states that it is not uncommon at North Dalton, E. Yorks, "provided the surface of the soil is reduced to a dry powder" as not infrequently happens in July and August. The records below show that ground feeding may occur in a variety of situations and conditions. No observer has been able to identify the prey obtained.

DATE.	LOCALITY.	BIRDS INVOLVED.	OBSERVER.
May 18th, 1948	Ploughed field at Burghfield, Berks.	Several Swallows	K. E. L. Simmons
Aug. 7th, 1948	Wet reservoir bed near Huddersfield, Yorks.	c. 60 Swallows	J. C. S. Ellis
Sep. 14th, 1949	Sand at the side of Leighton Beck, Westmorland.	20 Martins	J. C. S. Ellis
August, 1949 (several times).	Exposed mud in salt marsh at Art-hog, Merionethshire.	c. 30 Swallows and Martins.	D. R. Mirams
June and July, 1950, (several times).	Cobbled yard of woollen mill, near Huddersfield, Yorks.	1 Swallow	A. N. Sykes
June 10th, 1951	Shore at Hilbre Point, Cheshire.	1 Swallow, 2 Martins	L. S. Taylor

Fourteen House-Martins roosting in one nest.—In 1950 House-Martins (*Delichon urbica*) built a couple of nests under the eaves of my house at Oakley, Beds, and succeeded in rearing families. Martins returned about April 4th, 1951, and were not long in visiting the old nests, one of which had been partly damaged by sparrows. On May 8th and 9th the wind was N. and very cold. Early on the morning of the 10th I observed that a number of wing-primaries and tails were projecting from both nests; no doubt the birds had gone there to roost out of the cold. At 8.30 I noticed that the damaged nest was vacated, but the fan of wings and tails was still protruding from the other. I went upstairs and

called through the open window, but without any result; I then reached out and hauled a bird out by the tail, then another and another. These, of course, had been the last arrivals and had wedged themselves so firmly in that they evidently could not back out; neither could they get further in, for no fewer than fourteen birds in all came out.

A. G. OLDFIELD.

Kingfisher attacking Little Grebe.—On September 27th, 1949, on the river Wear at Whitworth, Co. Durham. I was watching two adults and four juvenile Little Grebes (*Podiceps ruficollis*). One of the adults repeatedly came up from a dive with a fish hanging from its bill and then swam towards the juveniles encouraging them to follow it into mid-river. While the adult was swimming round with a fish dangling from its bill a Kingfisher (*Alcedo atthis*) flew past. When two or three feet beyond the grebe the Kingfisher turned back and proceeded to fly round the grebe in circles, flopping onto the water every two or three seconds with a splash and a scream. It did not dive at the grebe nor into the water, but hit the surface with breast or abdomen, and on each occasion there was an audible splash and a cry "between a squawk and a shriek". The Kingfisher did not seem to want to attack the grebe or to steal the fish but rather to demonstrate annoyance by creating a disturbance. The grebe was at times forced to dive, but it emerged with the fish held by the tail. After circling and splashing round the grebe for some minutes the Kingfisher flew to a perch in midstream and silently contemplated the grebe which swam swiftly and deliberately towards it with the fish still in its bill. The Kingfisher waited till the grebe was quite close and then flashed away out of sight.

CAROL GREENWELL.

Courtship and threat displays of Kingfisher.—On April 12th, 1950, I was watching Kingfishers (*Alcedo atthis*) at Ranworth Broad, Norfolk. One was seen to fly in towards a rowing boat moored to the shore and to circle round over it, calling loudly. A second bird appeared from another direction, also calling, and headed towards the boat. When the birds were close the calling became frequent and excited. Both landed on the boat, one, slightly the more sombre, on the edge, the other in the centre of the flat platform in the bows. The first bird, which, though duller, should probably be considered the male, was facing the water; the presumed female was facing at right angles away from the male. A few seconds after landing, the female twice in succession raised its tail to some 30° off the vertical and then lowered it. After about half a minute calling began again and the presumed female moved to the edge and approached the male more closely. The male then appeared to drop down to touch the water with its bill, rise half way up the height of the boat and return to the water, several times in quick succession. On each occasion the bird on the boat dropped half way down to meet the other in mid-air. I

could not see whether any food was passed, but am certain that no large fish was presented. Both birds suddenly flew off calling.

R. G. PETTITT.

ON June 20th, 1950, on the lake in Bowood Estate, near Chippenham, Wiltshire, I witnessed an interesting display by a Kingfisher. Three birds were fishing from overhanging trees for about 20 minutes, without any unusual occurrence. Then one flew onto a dead branch from which a second bird was fishing and a rapid chase ensued, both birds eventually landing on a dead tree, lying in the water. One bird then stretched its head and neck straight up into the air, with feathers depressed, in the manner of a Bittern (*Botaurus stellaris*) when alarmed. In this attitude, it produced a loud trilling call, after which it resumed a normal posture. Almost immediately, it hunched up its body, with neck and head pointing forward, at a low angle, rather like a Coot's (*Fulica atra*) threat display. This was accompanied by forward jerking motions of the whole body, while uttering intermittent calls.

After displaying in this manner for several minutes, both birds flew on to separate perches and resumed fishing. The third bird took no part in the proceedings and was presumably a female.

GEOFFREY BOYLE.

Marsh-Harrier in Surrey.—Mr. Hubert E. Pounds reports that on August 16th, 1951, he had good views of an immature Marsh-Harrier (*Circus aeruginosus*) over a tract of swampy ground in Surrey. A satisfactory description has been supplied.

Distraction display of Pintail.—Messrs. Humphrey Pease and E. W. Flaxman have supplied a record of "injury-feigning" by Pintail (*Anas acuta*) which may be added to those already recorded (*antea*, vol. xlv, pp. 105-106). In this instance, which occurred on July 9th, 1951, a drake was seen "flying about 3 feet above the ground, apparently with great difficulty". The attitude in flight was unusual, the head being held well up with the neck vertical or even bent slightly backwards; the legs were dangling. Subsequently a duck was watched "in a brief and laborious flight" before "crash-landing" in a dyke. No ducklings were seen, but it is thought that the birds had nested in the locality. Mr. James G. Warner has also sent an account of a display which he and Mr. R. H. Harrison saw on May 1st, 1949. In this case the duck "seemed to run along the ground in a sinuous fashion, giving a snapshot impression of a rabbit that had been hit in the hind parts and was trying to get away". The bird subsequently gave a display of "injury-feigning", during which it uttered at short intervals a "low, grating sort of croaking note".

Eiders off the coast of Kent.—With reference to the record (*antea*, vol. xlv, p. 71) of Eider Ducks (*Somateria mollissima*) off the coast of Kent, we have received further records of individuals

being seen in this area in the summer. Mr. J. N. Hollyer reports an immature male and seven females or first-year birds in Sandwich Bay from July 16th, 1950, to September 13th, followed by a juvenile male from September 16th to October 15th. Drs. J. M. and J. G. Harrison report a single adult drake off the coast between Cliftonville and Kingsgate, first seen on July 13th, 1951. It seems possible that the presence of the birds off Kent at that season may be due to the existence of a breeding colony in Holland.

Balearic Shearwater off Sussex and Norfolk.—On August 26th, 1951, we saw a shearwater off Langney Point, Sussex. The bird was flying in a south-westerly direction and approached to within about 300 yards of the shore. The following particulars were noted. The size approximated to that of a Manx Shearwater (*Puffinus p. puffinus*) (L.P.A., C. M. J.), but was rather larger than a Manx (D. D. H.). While the upper-parts were dark sooty-brown and not black as in a Manx, the under-parts were greyish with a brown suffusion, the palest part being in the centre of the body. The under-sides of the wings had dark margins and darker tips. There was thus no striking contrast between the upper- and lower-parts as in the case of the Manx Shearwater.

The above description appears to correspond with that given in *The Handbook* for the Balearic Shearwater (*Puffinus p. mauretanicus*). There was a strong S.W. wind at the time. Since the record of December, 1915, was not considered by the authors of *The Handbook* to be sufficiently authenticated, this would seem to be the first record of this subspecies for Sussex.

L. P. ALDER, D. D. HARBER, C. M. JAMES.

On September 9th, 1951, we saw a Balearic Shearwater (*Puffinus p. mauretanicus*) off Blakeney Point, Norfolk. The bird was flying in an easterly direction about 1,000 yards out. Conditions of visibility and light were excellent and we were able, through telescopes set at x 25 and x 30, to note the following particulars; size, somewhat larger than that of a Manx Shearwater (*Puffinus p. puffinus*), a bird with which we are both quite familiar; upper-parts, dark brown, not black as in a Manx; under-parts, light brownish, palest in the centre of the body. There was a N.E. wind at the time. This would seem to be the third record for the county.

D. D. HARBER, A. R. MEAD-BRIGGS.

Colonial nesting of Great Crested Grebe.—Mr. J. N. Hobbs reports that in 1950 eleven pairs of Great Crested Grebes (*Podiceps cristatus*) nested in an area of submerged grass and rushes measuring not more than 30 yards square at Wilstone reservoir, Tring, Herts, some of the nests being very close together. The grebe population is high and cover rather limited at Wilstone, but a dense reed-bed several hundred yards in length contained only 10 nests, so that this colonial nesting was not entirely due to the force of circumstances which may account for it in other cases.

Wood-Sandpiper in Radnorshire.—Mr. R. H. Baillie reports that on August 10th, 1951, he found two Wood-Sandpipers (*Tringa glareola*) at Llyn Hilyn pool, Radnorshire. We understand that this is the only Radnorshire record known to Mr. G. C. S. Ingram who is collecting records for this county which has, as yet, no published avifauna. We take this opportunity of requesting further records of Wood-Sandpipers in 1951, as reports suggest that the species was again abundant in the autumn.

Golden Plover in Sutherland showing characters of Northern race.—On June 21st, 1951, I watched a male Golden Plover near Ben Armine, Sutherland, which was clearly distinguishable from the many other typical Golden Plovers (*Pluvialis a. apricaria*) in the vicinity by its black cheeks, breast and under-parts, and by a white line bounding this area, which continued above the eye and over the base of the bill. This bird, which resembled a bird of the Northern race (*Pluvialis apricaria altifrons*), was mated to a female of the Southern race, and from their agitated behaviour it was evident that they had eggs or young. We were unable to find the nest.

On the moor of Dalreavach, near by, I subsequently saw two other male Golden Plovers which might be described as intermediate in plumage between the Northern and Southern races. They showed black on the cheeks, breast and under-parts, but white feathers bounded the black only in the region of the belly and lower breast. Further up, the black feathers merged indistinctly with the golden ones of the mantle and neck. There was no white at all on the head. It may also be of interest to record that the F. G. Millais collection at Perth contains a Golden Plover with marked "Northern" characteristics. It is labelled "♂ breeding. Loch Stennis, Orkney, July, 1884."

DAVID JENKINS.

[It has been pointed out (*antea*, vol xlii, pp. 193-196) that individuals showing the characters of one race may sometimes turn up in the area occupied by another. Reference has also been made to cases of apparent "Northern" Golden Plovers breeding well within the range of the Southern race (*antea*, vol. xlii, pp. 383-4). It is impossible to say whether the bird described by Mr. Jenkins was a true Northern or an aberrant individual of the Southern race.—EDS.].

Sandwich Terns carrying Food on Migration.—Throughout August 12th, 1951, and most of the following morning, Sandwich Terns (*Sterna sandvicensis*) were observed passing offshore near Aldeburgh, Suffolk, at the rate of up to 25 an hour in a southerly direction. About 75% of these birds were carrying small fish in their bills, apparently content simply to transport them without making any attempt to eat the food. It is significant that, out of a total of some 100 birds, only two or three paused to fish offshore,

and the remainder could be observed into and out of sight still carrying their fish. The habit was confined to the Sandwich Terns, although smaller numbers of Little Terns (*S. albifrons*), and Common/Arctic Terns (*S. hirundo* and/or *S. macrura*) were also passing.

T. C. SMOUT AND H. F. DIXON.

Herring-Gull dropping and catching object in bill.—Mr. I. Nisbet has reported to us a case of a Herring-Gull (*Larus argentatus*) apparently playing with an object over the Thames at Hammer-smith on February 24th, 1951. The bird allowed the object to drop about 10 feet, then swooped and caught it. It dropped it into the river three times before leaving it there. This incident may be compared with similar behaviour by a Hooded Crow (*antea*, vol. xliii, p. 333) and a Black-headed Gull (*antea*, vol. xlv, p. 69).

Iceland Gulls in Caernarvonshire.—Mr. R. A. O. Hickling reports that on October 25th, 1950, off Great Orme's Head, Llandudno, he saw two adult Iceland Gulls (*Larus glaucoides*), about 50 yards out on the water below the cliff road. They were very pale grey on the mantle with no black tips to the primaries, the long tips crossing over the tail. They were in the company of Herring-Gulls (*L. argentatus*) and were seen to be rather smaller than that species with a neater head. When they flew off with Herring-Gulls and a single Great Black-backed Gull (*L. marinus*) their light buoyant flight was most marked, and gave an impression of slender wings.

SUPPLEMENTARY NOTES.

As foreshadowed in an Editorial published in May, 1951 (*antea*, vol. xlv, p. 146), we propose to use this heading for a list of notes which either supplement information given in *The Handbook* or give further instances of behaviour already fully reported in our pages. The notes will be filed for reference so that full details will be permanently available. The following list includes notes which have accumulated over a long period, and in some cases we have to apologise to their contributors for belated publication.

Rook (*Corvus frugilegus*).

DISPLAY & POSTURING.—Additional records of coition on the ground (*cf. antea*, vol. xlv, p. 14) have been supplied by D. R. Edgcombe, K. R. Chandler, D. G. Andrew, K. E. L. Simmons and W. R. P. Bourne; the last named points out that this behaviour was recorded by Gilbert White. D. G. Andrew records successful coition on January 12th, and begging and feeding on November 1st. Pair seen to face one another, engage beaks and "see-saw up and down a few times" (N. M. Hepworth).

BREEDING SEASON.—Birds sitting in rookery at Blagdon, Somerset, on March 10th, 1950 (W. L. Roseveare).

Jackdaw (*Corvus monedula*).

DISPLAY & POSTURING.—A further case of courtship feeding (*cf. antea*, vol. xliii, p. 113) has been recorded by J. R. Pattison.

Magpie (*Pica pica*).

BREEDING.—Nest seen in a crevice in a boulder in Norway (W. L. Roseveare).

FOOD.—Recorded catching a bat in flight and eating it (R. Alexander) and attacking an adult Starling (J. G. Cheetham) and fully fledged juvenile Blackbird (Mrs. R. Brown).

Starling (*Sturnus vulgaris*).

GENERAL HABITS.—Systematic search of gutters for food washed down from roof now a regular habit at Burnley (K. G. Spencer).

FOOD.—Seen carrying a shrew (R. W. Millward).

Greenfinch (*Chloris chloris*).

DISPLAY & POSTURING.—Bill-gaping as part of display to female recorded by John Denny. "Injury-feigning" from eggs recorded by R. S. R. Fitter.

FOOD.—Seeds of Wych-Elm (*Ulmus glabra*) (H. G. Attlee).

Goldfinch (*Carduelis carduelis*).

FOOD.—Seen extracting seeds from pine-cones (Miss M. R. Jellicoe).

Citril Finch (*Carduelis citrinella*).

DISTRIBUTION ABROAD.—Recorded in Syria (E. M. Cawkell).

Linnet (*Carduelis cannabina*).

DISPLAY & POSTURING.—Further instances of song- and display-flights (*cf. antea*, vol. xliv, p. 16) recorded by John Denny and Geoffrey Boyle.

Bullfinch (*Pyrrhula pyrrhula*).

DISPLAY & POSTURING.—Courtship feeding recorded by John Shepperd.

FOOD.—Seeds of birch (*Betula alba*) and Wych-Elm (H. G. Attlee); Bittersweet (*Solanum dulcamara*) (K. Blackwell); groundsel (*Senecio vulgaris*) and sow-thistle (*Sonchus oleraceus*) (H. R. Tutt).

Chaffinch (*Fringilla coelebs*).

DISPLAY & POSTURING.—Male posturing so as to display only the breast to female, display accompanied by "low, continuous warble" (Miss M. R. Jellicoe).

Corn-Bunting (*Emberiza calandra*).

GENERAL HABITS.—Seen to walk "in Lark-like manner" (F. Brady).

DISTRIBUTION ABROAD.—Several near Damascus, Syria, April, 1944 (E. M. Cawkell).

Yellowhammer (*Emberiza citrinella*).

BREEDING.—Some nest regularly in haystacks in Herts (J. N. Hobbs)—*cf. antea*, vol. xliii, p. 228.

Reed-Bunting (*Emberiza schoeniclus*).

GENERAL HABITS & FOOD.—Cock seen to chase and catch a large dragon-fly—probably *Brachytron pratense*—(D. & M. Summers-Smith). Cock seen to chase, but not catch, a Maiden Dragon-fly *Calopteryx virgo* (K. R. Chandler). For fly-catching flight *cf. antea*, vol. xliii, p. 370.

House-Sparrow (*Passer domesticus*).

GENERAL HABITS.—Seen fly-catching from the ground (John Hobbs) and attacking a lizard (R. W. Arthur).

DISPLAY & POSTURING.—Further cases of cloaca-pecking have been reported by Mrs. F. E. Pettit, D. Warden, C. H. Cooke and K. G. Spencer (*cf. antea*, vol. xliii, p. 135).

FOOD.—Female seen eating elderberries (E. L. E. Watkiss).

Tree-Sparrow (*Passer montanus*).

VOICE.—Song, "a thin, twittering warble, quite free from harsh notes, lasting 5 or 6 seconds" heard at Huddersfield, April 22nd, 1950 (J. C. S. Ellis)—*cf. antea*, vol. xlii, p. 213.

Meadow-Pipit (*Anthus pratensis*).

FOOD.—Seen to catch and eat sand-hoppers (*Talitrus locustra*) (A. V. Cornish).

Ashy-headed Wagtail (*Motacilla flava cinereocapilla*).

VOICE.—Call-note sounding like “weezup,” and distinct from normal “tsip” of other *Motacilla flava* subsp., heard in Camargue (R. H. Casson).

Yellow Wagtail (*Motacilla flava flavissima*).

DISPLAY & POSTURING.—A further case of distraction display reported by Miss B. A. Coney (*cf. antea*, vol. xliii, p. 383).

FOOD.—Seen taking seeds of thistles (D. B. Grubb).

Grey Wagtail (*Motacilla cinerea*).

BREEDING SEASON.—Young already quite strong on the wing, May 4th, 1950, N. Devon (W. L. Roseveare).

Pied Wagtail (*Motacilla alba yarrellii*).

GENERAL HABITS.—Sun-bathing observed near Cardiff, June 25th, 1950 (G. C. S. Ingram).

Tree-Creeper (*Certhia familiaris*).

GENERAL HABITS.—Further cases of taking insects in flight (*cf. antea*, vol. xliii, p. 335) have been recorded by B. S. Fox, H. C. Holme and R. B. Warren; R. W. Arthur records aerial combats between pairs, one pair even “tumbling into water”. The late H. Tully records a further instance of sun-bathing (*cf. antea*, vol. xliii, p. 117).

Nuthatch (*Sitta europaea*).

DISPLAY & POSTURING.—Courtship feeding (*cf. antea*, vol. xliii, p. 329) and cock “slowly raising head until neck was fully stretched with bill pointing directly upwards” before coition described by G. H. B. Snell.

Blue Tit (*Parus cæruleus*).

GENERAL HABITS & FOOD.—Seen repeatedly making fly-catching flights to take small insects identified as *Hydrobaenus* sp. (*Chironomidae*) (Bernard King). Attacks on hothouse grapes and peaches recorded at Syson, Middlesex (H. A. Bilby).

Marsh-Tit (*Parus palustris*).

FOOD.—Seen feeding brood on larvae of frog-hopper (*Homoptera*) extracted from protective “spittle” (A. H. Betts).

Northern Willow-Tit (*Parus atricapillus borealis*).

GENERAL HABITS.—Seen catching insects by fly-catching flights and by diving to the ground (P. H. Gamble).

VOICE.—Song heard in Swedish Lapland not unlike British Willow-Tit's or one form of Marsh-Tit's; call-notes include nasal “tchaa” of British race, occasionally preceded by explosive note very similar to the “pitchuu” of Marsh-Tit, also thin “si” or “chi” and coarse “zit”. (P. H. Gamble).

Spotted Flycatcher (*Muscicapa striata*).

DISPLAY & POSTURING.—Peter Gardiner describes aggressive display, directed at predators or rivals, in which loud bill-snapping, audible at over 30 yards, plays important part.

BREEDING.—A further case of a nest built on top of a Chaffinch's nest reported by E. I. Goulding; J. H. Owen states that in his experience this is not uncommon, though building on top of eggs is rarer (*cf. antea*, vol. xliv, p. 64). J. H. Owen also records building on top of nest and eggs of Song-Thrush.

FOOD.—Elderberries (F. R. Mann and K. J. Witts). Mr. Witts records that the birds took the berries by hovering in front of a cluster; a similar procedure adopted for taking berries of honeysuckle which were given to well-fledged brood still in nest (D. B. Grubb). Ground feeding recorded by Miss B. A. Coney.

Wood-Warbler (*Phylloscopus sibilatrix*).

DISPLAY & POSTURING.—Bird, disturbed from nest by tapping nest with stick, hovered about one foot above ground, facing stick, and hissed loudly before flying off; this display given regularly (P. J. Chadwick).

Grasshopper-Warbler (*Locustella naevia*).

DISPLAY & POSTURING.—Distraction display consisting of typical "injury feigning" followed by pointing the bill upwards to display the whitish throat at intruder (P. J. Chadwick).

Sedge-Warbler (*Acrocephalus schænobænus*).

DISPLAY & POSTURING.—John Denny records case of an adult begging for food from another on June 10th, 1950, when both were apparently feeding young.

Olivaceous Warbler (*Hippolais pallida*).

DISPLAY & POSTURING.—In threat display in defence of territory, seen in Egypt, male was singing with tail spread and depressed, wings shivered and drooping; displaying bird then perched below rival, displayed its yellow gape and twisted head from side to side (Geoffrey Johnson).

Whitethroat (*Sylvia communis*).

FOOD.—Seen to pursue a dragon-fly (*Sympetrum striolatum*) and catch it as soon as it alighted (Dr. C. Suffern).

Sardinian Warbler (*Sylvia melanocephala*).

BREEDING.—Of pair watched feeding young on Riviera coast on August 31st, 1950, male visited more frequently than female (P. W. P. Browne).

Song-Thrush (*Turdus ericetorum*).

GENERAL HABITS.—A further case of "anting" (*cf. antea*, vol. xlv, p. 21) recorded by A. K. Kent.

DISPLAY & POSTURING.—Bill-snapping as part of threat-display by bird disturbed at nest recorded by R. G. Adams (*cf. antea*, vol. xliii, pp. 18, 337).

Blackbird (*Turdus merula*).

GENERAL HABITS.—Several further examples of sun-bathing quoted by Dr. K. B. Rooke, who believes that this is a common habit in the species. D. Warden has supplied details of several observations of sun-bathing, all in July and mostly by juveniles. A case of "dew-bathing" reported by R. A. F. Gillmor.

VOICE.—N. M. Hepworth describes a curious song somewhat resembling Starling's twitter, but also including Linnet-like and Thrush-like phrases, March 13th, 1951, Yorks. Imitation of human whistle recorded in three successive seasons (A. Marshall).

BREEDING.—Clutch of two eggs hatched in just over 11 days (C. J. R. Thorne).

FOOD.—Seen to catch and eat a newt (*Triturus vulgaris*) (E. R. Duncombe, *per* J. E. S. Dallas) and a Common Eel (*Anguilla vulgaris*) about seven inches in length (D. R. Edgcombe).

REVIEWS.

Gronlands Fugle. Part II. By Finn Salomonsen. Illustrated by Gitz-Johansen. (Munksgaard, Copenhagen, 1951. 66s.).

The second part of this important work deals with the Ptarmigan, the waders, skuas and gulls and the Arctic Tern; as its prohibitive cost and unwieldy size must render it inaccessible to many, the main points of interest to British observers will be indicated here.

Dr. Salomonsen describes the "lemon-yellow" orbital ring of summer-adult Glaucous Gulls and the "reddish-violet" or "reddish-brown" orbital ring of summer-adult Iceland Gulls as the best identification mark, adding

"The Iceland Gull is more finely built than the Glaucous Gull, and has a more slender body with comparatively longer and narrower wings, a thinner and shorter bill and smaller head. In flight the Iceland Gull looks more graceful and has more rapid wing-beats (on the average 160 per minute, as against 130 in the Glaucous Gull, according to my timing). On the ground the long wings give the body of the Iceland Gull a tapering shape, and this together with the smaller rounded head gives it an almost dove-like appearance, while the Glaucous Gull is robust in stature like the Great Black-back."

Nevertheless this exceptionally experienced authority on the two species finds "identification in the field extremely difficult" and says that "identification in flight is sometimes barely possible." If this is true of summer adults in highly favourable conditions, as the present reviewer can confirm, it underlines the need for extreme caution in sight identifications in winter in Britain. Dr. Salomonsen, however, refers to photographs by J. D. Rattar (*antea*, vol. xl, Pls. 49 & 50) as illustrating a reliable field distinction between young birds, the Glaucous having "a long strong bill with the apical black part reduced in length and contrasting strikingly with the basal light-coloured part, while the Iceland Gull has a thinner and shorter bill almost of uniform coloration." There is food competition between Glaucous and Great Black-back, but the Iceland being mainly a fish-eater competes with neither. Dr. Salomonsen finds the reviewer's *Ibis* (1930) estimate (actually there given as a "rough estimate") of 2,000-3,000 pairs of Iceland Gulls on Ivnajuagtuk "far too high"; as the birds were perpetually disturbed by Greenlanders shooting this may be so, but in view of the constant counting of samples of birds approaching and leaving as well as at the colony I find it hard to agree that the size of this colony in 1928 was as small as he indicates, nor can I agree that the Iceland "breeds constantly above the Kittiwake" since I have seen large numbers of Kittiwakes breeding on the same ledges as Iceland Gulls and no more than a foot or so apart, at about the altitude stated in this book as the maximum at which Kittiwakes breed in Greenland.

Other points of interest are the records of enormous colonies of Kittiwakes and Arctic Terns, of the order of 100,000 breeding pairs in both species; the increased frequency of Northern Golden Plovers on spring passage recently; the northward spread of Red-necked Phalaropes and the desertion of southern breeding-places of the Grey Phalarope and Long-tailed Skua, attributed to the milder climate; the Long-tailed Skuas' excursions for long distances over the ice-cap; the curious distribution of the Ringed Plover, which is local or erratic except in the north-east where it is the second commonest bird, and which migrates to winter across the Atlantic, possibly in tropical Africa; and the recently proved movement of Kittiwakes from the North Russian Murmansk coast, one per cent. of whose Kittiwake population is estimated on the basis of ringing results to be shot by Greenlanders on the west coast. Among the numerous notes of life-history those on the Ptarmigan are particularly full of interesting points.

E.M.N.

The Land of the Loon. By G. K. Yeates. Country Life, Ltd., 1951. 18s.

Such is the charm of Mr. Yeates's way of picturing bird-haunts in words and photographs that it is fortunate to find him exercising his Pied Piper influence on a territory so well able to absorb the inevitably resulting stream of British ornithological travellers as Iceland. It may not be long before Icelanders have to rank such travellers with such recent colonists as the Starling and the introduced feral Mink as scourges brought over by modern external civilisation, although so far these ornithological invasions from the south have justified themselves by the important additions they have made to Iceland's ornithology. Although giving ample warning of the difficulties and discomforts to be faced, Mr. Yeates cannot help making his readers want to follow him, and his thirty illustrations are up to the very high standard which we have come to expect of him. This is particularly true of the photographs, one in colour and the rest in black-and-white, of the Great Northern Diver, which he calls by its American name, the Loon. Unfortunately the quality of the reproduction is not really worthy of the excellence of the photographs or of the reputation of the publishers, and one is left with the impression that considerably better results could have been achieved if as much skill and effort had been devoted to producing the book as to obtaining the pictures. If it is unavoidable that books should cost so much to-day both the author and the reader are entitled to expect a first-rate job from the block-maker and the printer.

Mr. Yeates gives some interesting facts about the now well-known influence of the milder climate on Iceland ornithology. The Little Auk as a breeding species has almost if not entirely gone, and the Grey Phalarope is losing ground, as in southern Greenland. Glaucous Gulls are also declining. On the other hand Pink-footed Geese, first identified as breeding in 1929, are flourishing, and the Snowy Owl and Knot are other arctic species only added to Iceland's breeding list since the second world war, although very likely overlooked before. Black-tailed Godwits and other temperate species are spreading.

E. M. N.

LETTER.

"SOOTY SHEARWATER OFF SUSSEX."

To the Editors of BRITISH BIRDS.

SIRS,—In your September issue (*antea*, vol. xlv, p. 314) is a sight record by Mr. D. D. Harber of a "Sooty Shearwater" seen off the Sussex coast, "some way out" to sea. The bird is described simply as "a large, all-black shearwater with a rather heavy body." Surely, when the oceans of the world contain a number of species that could be described similarly it is little more than guesswork to assume that Mr. Harber's bird was a Sooty Shearwater. Furthermore his description does not accurately apply to that species, which is *not* all black. I am sure that those who are familiar with the Sooty Shearwater in the field would agree that one of its most striking characteristics, if not *the* most striking, is the pale line on the under-side of the wing.

In short this record is not acceptable and I am astonished that the Parnassus of ornithologists who constitute the editorial board of *British Birds* should have admitted it.

M. F. M. MEIKLEJOHN.

[While we welcome any contribution towards establishing the highest standards of evidence for the accuracy of sight identifications we cannot accept the implication that such records should be rejected on the ground that the description given might apply to some other species to be found in other Continents or regions of "the oceans of the world," unless there is some reasonable ground for supposing that the other species in question has occurred, or may occur in the British Isles. Acceptance of this principle would rule out, for example, any British sight record of an Arctic Tern on the ground that it might have been one of the two virtually indistinguishable subantarctic species *Sterna virgata* or *Sterna vittata*.

We agree, however, that the published supporting evidence in this case was insufficient, and we hope that this trouble will not recur if the revised arrangements for dealing with sight records of rarities announced in our January issue (*antea*, pp. 1-2) are generally adopted, now that they have been published with the support of so many of those mainly concerned.

Mr. Harber has at our request supplied the following additional information on the challenged record:

"The Sooty was a larger, longer-winged bird, than a Balearic, appearing to approximate in size and shape to a Cory's, though, as it seemed to me, perhaps a little smaller. Nor do I believe that a Balearic would have appeared so intensely black (as black as a male Common Scoter) as my bird did, even at that distance. Nor does a Balearic show the feature which I particularly noted at the time and mentioned in my note, the relatively heavy body. It was not until I had consulted *The Handbook* that I discovered that this is given by Wynne-Edwards as a feature of this species.

Now for the pale line on the under-side of the wing of the Sooty. My bird was a good way out on each of the four occasions when I had it in view. How far I did not estimate at the time and would not care to guess now. But it was sufficiently far for me not to expect to see this pale line, which I knew to be present in Sooty. I nevertheless looked hard for it and even thought on one occasion that I could see it, but not so as to be certain."

While it would have been more satisfactory to have fuller details we see no reason to doubt that Mr. Harber, who has given special attention to shearwaters was correct in his identification of this rather scarce, but probably regular, autumn visitor.

We must, however, strongly support Professor Meiklejohn's note of caution about identifications at sea, which are often attempted at longer ranges, in trickier lights, in worse weather conditions, on briefer glimpses, and with much less experience of the species possibly involved than would be regarded as adequate on land. In addition the available museum material and the volume of tested experience on field characters is still in some cases unsatisfactory, plumage variations and changes are not fully explored, and it is far more difficult to estimate size reliably. The difficulties arising in connection with shearwaters in the Channel are fully discussed in a paper in this issue.—Eds.]



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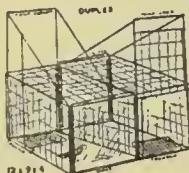
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BRITISH BIRDS

NUMBER 3, VOL. XLV, MARCH, 1952.

VISIBLE MIGRATION AT LAND'S END.

BY

DAVID AND ELIZABETH LACK
(Edward Grey Institute, Oxford)

INTRODUCTION

THE study of visible migration, initiated by Eagle Clarke (1912), has received a new impetus in the last few years. In October, many Sky-Larks (*Alauda arvensis*), Chaffinches (*Fringilla cœlebs*) and Starlings (*Sturnus vulgaris*), with smaller numbers of other passerine species, migrate by day southwest and west across England and have been traced as far as North Devon, where the coasting movements westwards have attracted much attention (Allen, 1944, Bannerman, 1944; Holt, 1950; Hurrell, 1944; Lack, 1949; Simms, 1950; Wood, 1950). To see what becomes of these birds, we spent from October 8th to November 1st, 1951, in the Land's End region. Here we watched chiefly at Gwennap Head, the south-western "corner" of England, and at Carn Glouce and Cape Cornwall, adjacent headlands half-way up the west side of the Land's End peninsula, also paying occasional visits to other places. The main localities are shown in Fig. 1. The only previous observations on migration in this area are at Carn Glouce by Hartley (1945), who saw Sky-Larks coasting south on many days in October, and Chaffinches once going south and once north.

Particularly where birds are taking off over the sea, it helps to have two observers, one counting all that passes and the other following selected parties as far as possible to determine their direction of flight, which sometimes changes out to sea. Actual counts are important, as they enable quantitative comparisons to be made, and they should extend over at least one hour continuously, preferably for longer. Counts over sample periods of five minutes, as by Holt (1950), are in our view highly misleading. The places selected for observation may be critical. To give only one example, on October 10th one of us, on the tip of Gwennap Head, saw Sky-Larks mainly taking off south out to sea, while the other, only two hundred yards further east, saw chiefly birds travelling east along the coast. This was because Sky-Larks coming from the north divided into a southerly and an easterly stream several hundred yards before they reached the southern cliffs. One observer alone would have had a misleading idea of what was happening.

Most of the migration that we saw was of birds "coasting," i.e. travelling along the coast and following all the major turns and bends, though sometimes cutting across the top of a projecting headland or over a small bay. In most cases the birds travelled on a narrow belt slightly inland of the cliffs. We also saw birds taking off out to sea, nearly always coming from the coasting stream, except

in the case of the Starling, in which the flocks usually appeared from inland.

At Carn Glouce and Cape Cornwall, near which we resided, we started our observations soon after dawn, but at other localities not until about 08.15 hours (sun-time). We normally ceased watching about noon, but on some days resumed again in the afternoon.

NUMBERS IN RELATION TO WEATHER AND TIME OF DAY

In Table I, we have set out the number of individuals passing in the peak hour of each day under different weather conditions. This shows that much more migration took place with a light than with a strong wind, and in sunny weather than in either fog or rain. A strong wind had a much greater adverse effect on the Chaffinch than on the Sky-Lark, but Chaffinches seemed less affected by rain than Sky-Larks. Scarcely any migration was seen in heavy rain with a strong wind, or in fog, or on one day when it was heavily overcast due to high fog.

Sky-Larks started passing soon after sunrise, reaching their maximum between 08.00 and 10.00 hours, in the second and third hours after dawn, with no sharp peak. Migration usually continued in moderate strength until about noon, and occasional parties passed during the afternoon. Chaffinches also started passing soon after dawn, usually reaching a sharp peak about an hour later, while on most days the movement was almost over by 10.00 hours. There were, however, exceptions. On October 25th, after a fine early morning, the wind freshened and the sky became overcast, and a big movement started at 10.45, reaching a peak around 11.00 (when 400 birds passed in 15 minutes) and continuing, with intermissions, until 12.30, with occasional parties until at least 13.40 hours. On October 30th, on the other hand, the biggest movements occurred at dawn, but these were of birds setting out over the sea, not coasting, while on November 1st a big coasting movement was well under way as early as 08.00 hours, when we had to leave. In the Starling, all the big departures out to sea took place around dawn, but flocks of smaller size continued to leave in the next two hours, and we saw one party of 150 birds set out at 15.45 hours.

Sky-Larks usually travelled in parties of under 10 birds, and flocks of over 25 were uncommon. Chaffinches were chiefly in parties of 10 to 25, except when the movement slackened, when most parties included less than 10 individuals, while in the biggest movements flocks of 30 to 80, and once 120, occurred. The Starlings migrating at dawn were often in flocks of over 1,000 and one huge flock must have included 5-10,000 birds. After the dawn departures were over, the departing flocks usually included between 50 and about 400 birds.

HEIGHT OF FLIGHT

Coasting Sky-Larks usually flew 50-100 feet above the ground, but when coming from the cliffs over the sea, they would fly a little way

and then characteristically drop down low over the water, proceeding at this height until out of sight. Coasting Chaffinches usually flew rather higher than Sky-Larks, though so long as we stood on the highest part of the cliffs, none were so high as to be difficult to see. On the few occasions when Chaffinches went out over the sea, they called more frequently than usual and rose higher. This happened even when the birds eventually returned to the land. Parties breaking off out to sea from coasting movements on October 25th and 30th remained at moderate height, but others setting off direct from a roost on October 30th circled up until they were almost at the limit of vision before heading out to sea, and one party rose beyond our range of vision before leaving the coast. Starlings usually flew low over the ground from inland on a broad front in a long straggly line, but on going out over the sea they bunched together and rose somewhat, though not nearly so high as Chaffinches.

BEHAVIOUR WHEN SETTING OFF

In normal weather soon after dawn, and in foggy weather when the sun broke through later in the morning, we often saw Sky-Larks starting to migrate from stubble fields. The birds would rise up, calling, then settle again. One party would set off, others rising with it but turning and again pitching. Then nearly all the birds might rise from one field, fly perhaps 100 yards and settle in another field, often returning again a few minutes later. Sometimes a large flock would rise together and set off, but a small group would detach itself and return. At these times, the birds acted rather excitedly, calling frequently, as during the migration itself, and flying in a variety of directions. We saw this behaviour both when birds were setting off along the coast and also at the Lizard Point, where many were taking off directly from the fields out to sea.

Many Chaffinches, evidently on passage, roosted in bushes inland near Cape Cornwall. Soon after dawn these birds behaved similarly to the Sky-Larks described above, rising in small parties and settling again, making random flights from the bushes to the fields and back again, and calling frequently. Before setting off, they sometimes circled to gain height, and this was particularly the case on the day when they set off directly out to sea.

The first flocks of Starlings would appear from inland at dawn and sweep straight out to sea, presumably having come direct from roosts near the coast. Others often went straight out in this way later in the morning. Many flocks, however, would come down to the shore, or to fields near the shore, and settle. Here they usually kept in closely bunched flocks, chattering vociferously, apparently feeding, running rapidly over the ground, and at intervals rising, flying a short distance and again settling. At intervals, a party would detach itself and take off over the sea, some of the birds perhaps turning back when off-shore, or the whole flock might rise up, circle and leave. Despite their excited chattering on the ground, the migrating parties were completely silent, this being in marked

contrast to migrating Sky-Larks and Chaffinches, which call repeatedly.

MOVEMENTS OF SKY-LARK

Sky-Larks were migrating nearly every day during our stay from October 8th to November 1st. Their movements were complex, and we took time to unravel the story, which is based on repeated visits to the Cape Cornwall area and to Gwennap Head, but on only one to three visits to Hudde Down, Navax Point, Pendeen Watch, Carn-Du, Kynance Cove and the Lizard, at all of which further observations are needed. The reader should follow the ensuing account with the help of Figs. 1 and 2.



FIG. 1. MAIN LOCALITIES VISITED.

The subsequent movements of the Sky-Larks coasting west and south-west down the north coast of Devon and Cornwall are shown in Fig. 2a. At Hudde Down we picked up the birds coasting west, and saw them briefly turning northwest with the coast at Navax Point, but cutting west over the top of the headland. At Pendeen Watch Sky-Larks arrived from the east, cut over the neck of the headland and followed the coast on south-west, and at Cape Cornwall they turned south with the coast, usually cutting over the neck of the headland, then keeping on south past Carn Glouce. At Gwennap Head, on the "corner," where the coast turns sharply from south to east, the coasting birds did likewise and travelled on east. At Carn-Du, where the coast turns north into Mount's Bay, we saw



FIG. 2a. SUBSEQUENT MOVEMENTS
OF SKY-LARKS COASTING SOUTH-
WEST DOWN NORTH COAST.



FIG. 2b. SUBSEQUENT MOVEMENTS
OF SKY-LARKS COASTING WEST
ALONG SOUTH COAST.



FIG. 2c. RÜCKZUG OF SKY-LARKS IN FROM THE SEA.

two parties of Sky-Larks, one a large one, leave the coast and strike out E.N.E. over the bay. At Kynance Cove, on the Lizard peninsula, birds were heading south-east along the coast towards the Lizard Point, where we saw them turning east with the coast. We have not followed them further. Summarizing, the stream of Sky-Larks coasting down the north coast continues right round the Land's End peninsula, travelling first west, then south, then east, following every local turn of the coast between north-west and E.N.E., though we did not see them turn further north than E.N.E.

From this coasting stream, parties detached themselves at intervals and took off in two different directions, one group W.N.W., in the direction of Ireland, and the other group south, in the direction of Spain. Taking the latter movement first, as we saw much more of it, many of those coming down to Gwennap Head from the north proceeded straight on out south. We followed many parties to the limit of visibility. Some turned when a little way off-shore and rejoined those coasting east, but most kept straight on. Of those which coasted east, many turned and went out south at Hella Point, a headland a few hundred yards east of Gwennap Head, while

the rest continued on east. This coasting stream eventually reaches the Lizard Point, where we saw many others take off south out to sea, while the rest continued coasting east. The existence of a southward passage from further east was demonstrated by Clarke (1912), who saw parties of Sky-Larks heading south on October mornings, during his stay at the Eddystone Lighthouse.



FIG. 3. AUTUMN MOVEMENTS OF SKY-LARK IN W. EUROPE.

Fig. 3 shows that if these birds continue south, they will strike land in north Spain, 400 miles away. Goodbody (1950) likewise saw Sky-Larks heading south from south-east Ireland, and these birds would have to travel 600 miles before reaching land. Goodbody points out that a small deviation to the east would bring them to Cornwall, but we did not see birds arriving from Ireland in this way. Further, the existence of a southerly passage over the Bay of Biscay is confirmed by our observations in October, 1949 and 1950, at Hendaye, on the Franco-Spanish frontier, and at St. Jean de Luz. Here we saw large flocks of Sky-Larks arriving in off the sea, flying south, presumably having crossed the Bay of Biscay, but starting

from further east than the longitude of Cornwall. On reaching the coast, these birds proceeded straight on south inland, and we saw them later passing high over a 3,000 foot mountain. Tait (1924) observed large movements of Sky-Larks in October south down the Portuguese coast, and as the birds arriving in the Hendaye region did not coast west, those seen by Tait presumably crossed the Bay of Biscay further west. They may well be the birds from Ireland. The evidence therefore suggests that Sky-Larks cross the Bay of Biscay southwards on a broad front, setting off from various English and Irish headlands. The flight from Ireland to Spain is of similar length to that over the Gulf of Mexico, which Lowery (1946) has shown is regularly undertaken by passerine birds.

It came as a surprise when we first saw a party of Sky-Larks coasting south near Carn Glouce break away and set off out to sea W.N.W. We had not considered the possibility of the coasting stream including birds bound for two different destinations, nor had we thought that birds eventually travelling rather north of west towards Ireland would temporarily coast due south. Later we saw several other parties take off from near Carn Glouce in this way, also one party from Pendeen Watch. Several other parties even followed the coast as far south as Gwennap Head, and there took off over the sea, first south, then turning south-west, then west and eventually north-west! Occasionally, also, flocks came down to Gwennap Head from the north, reached the southern cliffs and then turned back north, presumably taking off W.N.W. from further up the coast.

This is not yet the full story, for we found another coasting movement of Sky-Larks, west along the south coast of Cornwall, the subsequent movements of which are shown in Fig. 2b. These birds arrived at Gwennap Head from the east, where many of them struck out W.N.W. over the sea in the direction of Ireland, while others turned and coasted north. We traced the latter to Land's End, where we saw many more taking off W.N.W., while others continued coasting north. Likewise at Carn Glouce and Cape Cornwall, other parties took off W.N.W. and the rest continued coasting north. At Pendeen Watch, where the coast turns east, we saw two parties of Sky-Larks continue out north or N.N.E. over the sea away from the land, perhaps bound for West Wales. Further observations are needed here. One might expect that birds destined for Ireland would be reluctant to coast east, though in a strong wind Chaffinches did so on one occasion (see later).

The Sky-Larks heading for Ireland left between north-west and just north of west, most of them about W.N.W. Fig. 3 shows that this would bring them to south-west, not south-east, Ireland. Ruttledge (1938) recorded a large passage of Sky-Larks north up the west side of Ireland in October, these perhaps being the birds that we saw taking off for south-west Ireland, which later turn north up the west coast, and presumably from there spread gradually

inland to their wintering grounds*.

On our one visit to the Lizard, the wind was south-east and hence unfavourable for Sky-Larks coasting west (see later). We did, however, see one party arrive from the east, make two attempts to take off out to sea south and then continue on west. Further, two Pied Wagtails (*Motacilla alba*) came coasting west and then took off south-west out to sea. Also, at Carn-Du we saw a party of Sky-Larks arrive from the east and then strike out to sea due south. These observations suggest that the birds coasting west along the south coast, like those coasting west along the north coast, included not only individuals heading for Ireland but others heading for Spain. We have therefore shown arrows southward in Fig. 2b, but the regularity of such movements needs confirmation.

It may be suggested that the Sky-Larks passing through the Land's End region and then proceeding westwards towards Ireland have come chiefly from Central Europe, and are those seen by Eagle Clarke (1912) crossing the North Sea due west, while those passing through the Land's End region and heading south towards Spain have come chiefly from Scandinavia, and are those reported by Clarke arriving on the northern coasts of Britain from the north-east. Fig. 3 shows the geographical relations of these various movements.

We saw one further movement in the Land's End area, of Sky-Larks coming in from the sea, the direction of flight usually being north-east at Gwennap Head, east at Cape Cornwall and south-east at Pendeen Watch, i.e., at right angles to the coast, as shown in Fig. 2c. On arriving at the coast, these birds normally went straight on inland, and they often pitched if they reached fields suitable for feeding. We conclude that this was a "Rückzug" of birds which started to cross the sea but turned back and headed for the nearest coast.

As a result of these various movements, we were sometimes able on the same day to see Sky-Larks migrating in appreciable numbers in five different directions at Gwennap Head! Those coming from the north (i) went out south or (ii) coasted east; those coming from the east (iii) went out W.N.W. or (iv) coasted north; and there was (v) a Rückzug in from the sea north-east. All those setting off south towards Spain arrived from the north, and nearly (but not quite) all those setting off W.N.W. towards Ireland arrived from the east. It may be suggested that this is because nearly all those coasting west and south along the north coast which are destined for Ireland have already taken off over the sea before getting as far south as Gwennap Head; likewise those coasting west along the south coast and destined for Spain have similarly taken off before getting so far west. A glance at Fig. 3 will show why this should be so.

The numbers that we counted coming from each direction to Gwennap Head are shown in Table 2 for the peak hour each day.

*I. M. Goodbody writes that recent observations by the Irish Ornithologists' Club have revealed a strong north-westerly movement of Sky-Larks arriving on the east coast of Ireland from the direction of England.

During our visit as a whole, the total arriving from the north was rather similar to the total arriving from the east, but on any particular day one or the other group tended to predominate greatly, the coasting passage being stronger against the wind. Thus with a south-east wind, the birds coasting south then east predominated, while with a northerly wind the birds coasting west then north predominated. This was corroborated at Cape Cornwall, where the coast runs north and south. Here we watched on eight days, on six of which the wind was between south and east and the coasting movement was almost exclusively southwards, and on two of which the wind was northerly and the coasting movement was almost exclusively northwards.

The birds arriving at Gwennap Head from either direction split up into two groups, those continuing on out over the sea and those turning along the coast. As this division often took place a short distance before the birds reached the cliffs, it was not possible to count both groups accurately from the same place. In Table 2, therefore, we have given only a general indication of which movement was the stronger (see note ii for the terms used). If the directions taken by the birds are compared with the wind directions, it will be seen that Sky-Larks tended to set out over the sea chiefly with a following wind, or when to turn along the coast would have given them a following wind. Conversely, they tended to turn and follow the coast when this brought them head on to the wind, or when the sea crossing would have been against the wind. In addition, more set off out to sea in sunny weather with a light wind, than in fog or with a strong wind.

Hence the coasting movements of the Sky-Lark occurred chiefly when conditions were less favourable for migration, and in particular with an adverse wind. Further, big movements of Sky-Larks, perhaps the main ones, occur at night (Clarke 1912). Perhaps, therefore, the coasting movements, which are the main phenomenon seen by the field observer, are only a small and unimportant part of the migration of the species.

MOVEMENTS OF CHAFFINCH

Chaffinches were migrating on all suitable days from October 13th to November 1st, but not between October 8th and 13th, although two days (9th and 10th) seemed suitable. The movements of the Chaffinch were similar to those of the Sky-Lark but less complex, and we have therefore shown all of them on one map, Fig. 4.

The birds travelling west along the north Cornish coast were seen at Hudde Down going west, at Cape Cornwall and Carn Glouce going south, and at Gwennap Head going south, then turning sharply east with the coast, while at Carn-Du two Chaffinches coasting east there left the coast and struck out over Mount's Bay E.N.E. The route round the Land's End peninsula was therefore the same as that taken by coasting Sky-Larks. As in the Sky-Lark, also, there was a coasting movement in the opposite direction, the birds travelling



FIG. 4. MOVEMENTS OF CHAFFINCHES, BOTH THOSE COASTING FROM NORTH COAST AND THOSE COASTING FROM SOUTH COAST.

west along the south coast and turning north at Gwennap Head, and continuing north past Carn Glouce and Cape Cornwall. Further north at Pendeen Watch, one party left the coast and struck out N.N.W. over the sea, a route also taken by Sky-Larks and Starlings, but many other parties turned and followed the coast east, and temporarily even south-east. This was with a strong south-east wind, but even so it was a remarkable direction to be taken by birds presumably destined for Ireland.

Coasting Chaffinches took off over the sea far less often than Sky-Larks. On October 25th, with an east wind, there was an unusually heavy passage south past Carn Glouce, and three parties, involving over 150 birds, broke away and went out W.N.W., being followed a long way without changing direction. Even on this day, however, most parties kept on south, though several cut south-west across Whitesands Bay towards Land's End, a sea crossing of 3 to 4 miles, which we did not see them undertake on other days. The only other day that we saw Chaffinches taking off in the direction of Ireland was October 30th, after a hold-up due to bad weather. In still fine weather just after dawn, three parties, involving at least 120 birds, circled up from roosting places near Cape Cornwall and went straight out to sea between W.N.W. and north-west. A little later, near Carn Glouce, small flocks of Chaffinches appeared from the south coasting north, and most of these set off out to sea between W.N.W. and N.N.W., in all ten parties totalling 72 birds leaving between 08.20 and 10.35, while three parties totalling 20 birds continued coasting north, and two individuals coasted south. In similar weather at dawn on November 1st, many parties started by circling up, but all then coasted south; none went out to sea.

We apparently saw many fewer Chaffinches migrating than have been reported coasting west in north Devon. Should this conclusion be confirmed in other seasons, it may be suggested that many of these coasting west in Devon are destined for Ireland and have already taken off over the sea before getting so far south as Cape Cornwall.

We saw no Chaffinches take off south over the sea. On fine days

with a light wind, many of the parties coasting south to Gwennap Head rose high on reaching the cliffs, and went some way out to sea, but all eventually turned back and coasted east, though some did not turn until well off shore. The Chaffinches coasting south and then east in this way presumably cross the Channel later, probably at night, as found by Clarke (1912) at the Eddystone. As, however, Chaffinches crossing the sea by day sometimes do so at a great height, it is possible that a diurnal passage over the Channel has been overlooked.

On any one day, the coasting movement of Chaffinches was wholly or almost wholly in the same direction, though a very few individuals occasionally flew in the opposite direction for at least a short way. The data for Cape Cornwall and Gwennap Head in Table 3 show that the coasting movement was nearly always against the wind. With an east or south-east wind the birds coasted south, turning east at Gwennap Head, and with a northerly wind they coasted north, having turned from the west at Gwennap Head. To this there was one exception, since on October 19th with a light north-east wind, all the birds coasted south then east. Table 3 also shows that the movement south from the north coast was much larger in size than that north from the south coast. The maximum passage northwards, in very favourable weather, was 75 in the hour, the maximum passage southwards was ten times this figure.

On October 26th, with a strong south-east wind, Chaffinches were coasting south at Carn Glouce, but at Pendeen Watch, only four miles to the north, the movement was north-east up the coast, then south-east round the headland and on east. 120 passed in this way in an hour. Further observations are needed to interpret this. Chaffinches on passage roosted each evening in large numbers a little inland of Cape Cornwall, and we often saw a coasting migration start from here. On this day, the birds evidently left in two directions from these roosts.

As Chaffinches cross the sea mainly at night, or in high flights by day, it is more obvious than in the case of the Sky-Lark that the coasting movements seen by the observer are an unimportant fraction of the migration of the species.

MOVEMENTS OF STARLING

We saw the first Starlings migrating out to sea on October 14th and small parties left on most of the following days, but the passage was not large until October 25th, and much the largest flocks were seen on October 30th and November 1st, our last days. The movements of the Starling, set out in Fig. 5, were much simpler than those of the other species, as there was little coasting.

We saw most departures from the west coast, between Land's End and Cape Cornwall. Big flocks came from inland about dawn and went straight out to sea W.N.W. or north-west towards Ireland. Later in the morning, smaller flocks came down to the coast, some of them flying straight out, others turning and coasting (usually



FIG. 5. MOVEMENTS OF STARLING.

north) for a short way, others settling temporarily and then either taking off over the sea or moving further along the coast. The coasting movements were rather indefinite and were not easy to distinguish from feeding movements of resident flocks.

On October 30th, a peak day at Cape Cornwall, one party of 5-10,000 birds left out to sea at 07.25, another flock of 1,000 at 07.40, while between 07.40 and 07.45 three more flocks, each of several hundred birds, came from inland and turned north up the coast. Between 08.20 and 09.20, another 15 parties came from inland down to the coast and turned north, 500 in one flock near the beginning and later parties of 25 to 120 birds, once 300, in all 1,800 birds. Another 500, in six flocks, passed in the next half-hour, but the movement then fell off markedly. Likewise on November 1st at Cape Cornwall, a flock of about 3,000 left out to sea at 07.20, and in the next 40 minutes 11 more parties, totalling some 1,600 birds, came down to the sea from inland, all in this case leaving out to sea about north-west, though two parties coasted a short way south before doing so.

At Gwennap Head, the Starling movement was on a smaller scale than at Cape Cornwall. Thus between 08.40 and 09.40 on October 30th, when 13 parties involving about 1,000 birds passed at Cape Cornwall, only seven parties involving 166 birds passed at Gwennap Head. This difference is probably due to the fact that the Starlings mostly fly W.N.W. or north-west from inland, hence few would reach Gwennap Head, in the south-west corner of the peninsula, except those travelling along the south coast. Combining our observations for all days at Gwennap Head, we saw ten parties arriving from the east along the coast, five of which set off out to sea W.N.W. or north-west while the others turned north up the coast. In addition, we saw two parties of 50 birds come coasting down from the north, join up, and set out south over the sea. They were followed a long way, and did not change direction, so were presumably bound for Spain. This was on October 17th. Three days earlier another small party headed south out to sea, but then turned and coasted

east. Clarke (1912) recorded a southerly passage at the Eddystone but only at night.

At Pendeen Watch, where we saw one flock of Starlings take off in the normal direction just west of north-west, in the direction of Ireland, two others (on different days) set out N.N.E. and N.N.W. respectively, presumably making for west Wales or eastern Ireland. More observations are needed here.

Starlings, like Sky-Larks, were also seen coming in from the sea at right angles to the coast, north-east or east at Gwennap Head, east at Cape Cornwall, and E.S.E. or south-east at Pendeen Watch. The numbers involved were far smaller than of those setting out, the flocks usually consisting of under 50, often under 10, individuals. Once, however, soon after dawn, about 1,000 birds came in from the sea together, in a straggling front extending for about half a mile. These birds appeared 15 minutes after a flock of some 3,000 had set off, at a time when the coast was clear but there was mizzling rain out at sea. We sometimes saw part of a sea-going party break off and return to land, and others presumably did so further off shore. The returning parties often alighted in the fields. This Rückzug was exactly comparable with that seen in the Sky-Lark.

OTHER MIGRATING SPECIES

Five other small passerine species were seen travelling along the coast occasionally, but it was difficult to be sure whether they were migrating, or merely local residents. These were the Goldfinch (*Carduelis carduelis*) and Linnet (*C. cannabina*) in flocks of six to 30 birds, the Meadow-Pipit (*Anthus pratensis*) in parties of seven or under, chiefly in the first half of our stay, the Pied Wagtail (*Motacilla alba yarrellii*), usually travelling singly, in twos or threes, and the Reed-Bunting (*Emberiza schæniclus*), of which one and then two were seen on October 23rd. Some of these coasting parties were almost certainly migrating, as we saw others taking off out to sea, as follows: Goldfinch, 25 out south-east from the Lizard on October 10th, and five possibly out W.N.W. from Gwennap Head on October 17th; Linnet, parties of four, 14, 20 and 30 out south-west from Gwennap Head on October 14th, and parties of six and nine out south-west and a party of ten out W.N.W. from Gwennap Head on October 17th; Meadow-Pipit, small parties out south, sometimes with Sky-Larks, from Gwennap Head on several days in the first half of our stay, the maximum being 17 birds in one morning; Pied Wagtail, two coasting west which then took off south-west, from the Lizard Point on October 10th, and three out W.N.W. from Gwennap Head on October 17th. These four species, like Sky-Larks, dropped down over the water when setting off seaward.

We also saw small parties of Swallows (*Hirundo rustica*) and House-Martins (*Delichon urbica*), the largest flock consisting of nine birds, usually coasting against the wind, and once drifting southwards out to sea from Gwennap Head. A late Swift (*Apus apus*) coasted south past Cape Cornwall on October 13th.

At 10.15 a.m. on October 23rd, a Heron (*Ardea cinerea*) set off south over the sea from Gwennap Head, circling, flapping and gliding at a moderate height above the water, until lost to sight a long way out. Clarke (1912) recorded this species passing south at the Eddystone at night. Finally at 10.35 a.m. on October 15th, we saw a Buzzard (*Buteo buteo*) set off S.S.E. from Carn-Du, disappearing into mist when some distance off shore, so we cannot be sure that it was migrating.

We also saw a number of uncommon passage migrants along the cliffs, including a Snow-Bunting (*Plectrophenax nivalis*), a Richard's Pipit (*Anthus richardi*), several Ring-Ousels (*Turdus torquatus*), several Black Redstarts (*Phoenicurus ochrurus*), a Short-eared Owl (*Asio flammeus*), several Merlin (*Falco aesalon*), and a Pink-footed Goose (*Anser fabalis brachyrhynchus*). Further, both Fieldfare (*Turdus pilaris*) and Redwing (*T. musicus*) appeared on the cliffs several days earlier than we saw any inland. These records are of no special interest, except in suggesting that the coastal route is used by other, including nocturnal, migrants, and details will appear in the *Annual Report of the Cornwall Bird Watching and Preservation Society*.

GAPS IN OUR KNOWLEDGE

We would stress that we watched regularly only round Gwennap Head and Cape Cornwall (with Carn Glouce). The arrows on our maps for other places are based on very few observations, and movements almost certainly occur there in directions additional to those observed. Pendeen Watch, Carn-Du and the Lizard would particularly repay further study, as would many localities further east. We have, however, carried the problem a stage further, and hope that this paper will stimulate others to take part in the exciting sport of migration-watching. There are large areas of coast and many inland localities concerning which nothing is yet known, and where the pastime might be pursued with both profit and enjoyment. We would stress, too, that the biggest gap of all may be the migrations that we cannot see, because they occur either at night or at too high an altitude by day. Visible migration may, in fact, be only a small and unimportant part of the total migration of the species studied in this paper, in which case the coasting movements which have attracted so much attention may give a misleading impression as regards directions taken, times of movements etc. of the main migratory flights. The real problem for future research is perhaps "invisible migration".

SUMMARY

1. Sky-Larks coasted west along the north coast of Cornwall, turned south round the Land's End peninsula and then east, and they continued on east at least as far as the Lizard. Others coasted west along the south coast, turned north round the Land's End peninsula and up the west coast but have not yet been traced further. Both groups included birds which took off over the sea south in the

direction of Spain and W.N.W. in the direction of Ireland.

2. Chaffinches had similar coasting movements in both directions, but probably took off over the sea chiefly at night, though sometimes by day in the direction of Ireland.

3. Sky-Larks chiefly took off over the sea in fair weather and often with a following wind. Both Sky-Larks and Chaffinches coasted mainly against the wind.

4. Starlings took off W.N.W. from the west coast of the Land's End peninsula, coming from inland. A few set off south. Coasting movements were rather indefinite.

5. Migration was seen most commonly in sunny weather with a light wind, and least in fog, heavy rain, or strong wind. It was commonest in the first two hours after dawn, the peak time varying somewhat with the species. The behaviour when starting off, and when crossing the sea, is described.

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TABLE 1. INFLUENCE OF WEATHER ON MOVEMENTS

Wind	Weather	Dates in October	Sky-Lark	Number passing in best hour Chaffinch	Starling (out to sea)
Light	Sunny	9, 10, 13; 14, 19, 23, 24, 30, 1.XI	229, 124+, 70 80, 110, 193, 404, 215. (—) Average 179	(0, 0), 100, 79, 120, 46, 433, 75, 400+ Average 179	(0, 0, 0), 35, 9, 50, 150, 6000, 4600 +
Light	Fog (once heavily overcast)	8, 10, 11, 15, 16, 18	14, 7, 16, 10, 6, 12 Average 11	(0, 0, 0), 0, 2, 0 Average 1	(0, 0, 0), 0, 0, 0
Light	Showery	25	75	788	450
Strong	Sunny	17	124	8	100
Strong	Showery	21, 22, 26, 28	51, 43, 11, 12 Average 29	0, 0, 30, 15 Average 11	0, 0, 190, (0)
Strong	Heavy rain	27, 29, 31	0, 9, 0	0, 0, 0	0, 0, 0
Strong	Heavily overcast	12	18	(0)	(0)

NOTES: (i) For Sky-Lark and Chaffinch all migrants were counted irrespective of direction, but for the Starling only those setting off out to sea.
(ii) (0) Means none seen but too early in the season for migration to be expected. Such cases have been excluded in calculating the averages.
(iii) On 1.XI we counted only for about half an hour around dawn, too early for Sky-Larks.

TABLE 2. SKY-LARK MOVEMENTS AT GWENNAP HEAD

Date	Wind		Coming from N. and out S. or coasting E.		Coming from E. and out W.N.W. or coasting N.		In from sea N.E.
	Direction	Strength	Peak hour	Most left	Peak hour	Most left	Peak hour
10.X	S.E.	Mod.	220	More out S.	0	—	5
12.X	S.E.	Strong	18	Back N.	0	—	0
14.X	S.E.	Mod.	64	More coasting E.	10	(not noted)	0
17.X	N.N.E.	Strong	49	Mixed	93	Mixed	0
18.X	None (fog)	—	10	Coasting E.	0	—	1
19.X	N.E.	Light	34	Mixed	91	Out W.N.W.	0
20.X	W.	Mod.	24	Out S.	6	Coasting N.	0
21.X	W.	Strong	0	—	51	Coasting N.	0
22.X	N.	Strong	3	—	40	Coasting N.	0
23.X	N.E.	Light	67	Out S.	150	Out W.N.W.	32
24.X	E.	Light	283	Coasting E.	70	Out W.N.W.	72
30.X	N.W.	Light	7	Out S.	185	Out W.N.W.	20
TOTAL ...			779		696		136

NOTES: (i) The peak hour was not always the same for each direction, hence totals do not always correspond with Table 1.
(ii) When most birds left in one direction, this only is given; "mixed" means that considerable proportions left in both directions; "more" means some in both directions but a preponderance in one.
(iii) Visits normally from about 08.15 hours (sun-time) but on October 20th only in late morning.

TABLE 3. CHAFFINCH MOVEMENTS AT GWENNAP HEAD AND CAPE CORNWALL

Date	Wind Direction	Direction of coasting movement	Number in peak hour
13.X.	S.E.	S.	100
14.X	S.E.	S. E.	79
17.X	N.N.E.	W. N.	8
19.X	N.E.	S. E.	120
23.X	N.E.	W. N.	23
24.X	E.	S. E.	433
25.X	E.	S.	788
26.X	S.E.	S.	30
28.X	S.E.	S.	15
30.X	N.W.	W.N.	75
1.XI	S.W.	S.	400+

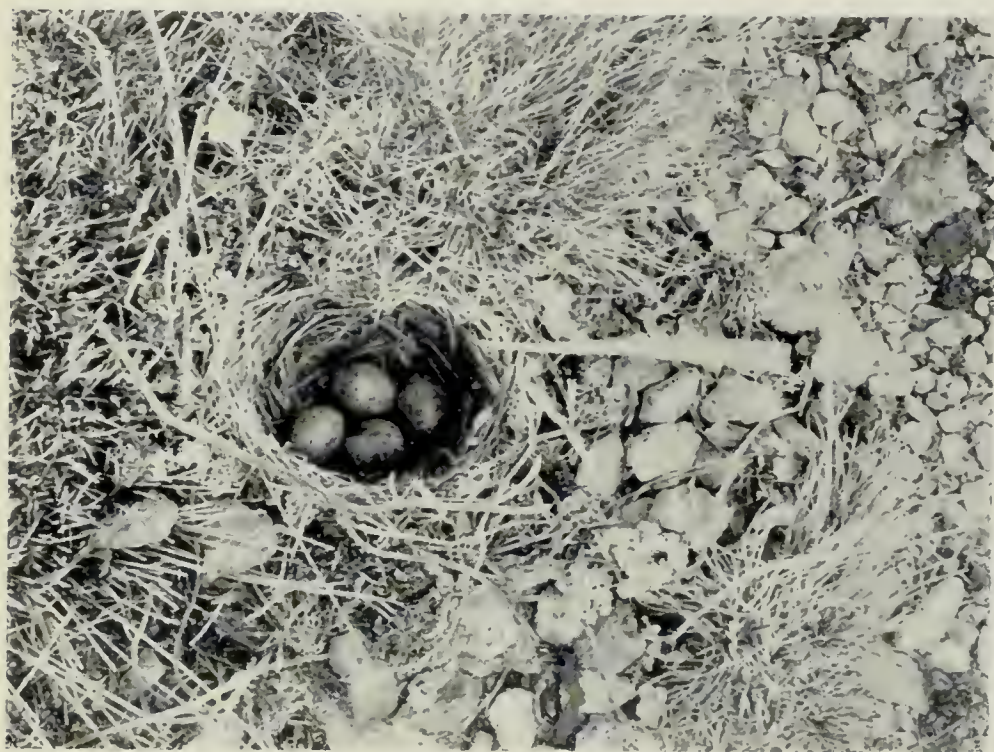
NOTE: Two directions are given when the observations were made at Gwennap Head, as the birds turned there, but only one direction at Cape Cornwall where the coast runs north and south.



SHORE-LARK (*Eremophila alpestris*).

MALE AFTER FEEDING THE YOUNG. SVAIPA, SWEDISH LAPLAND, JULY 4th, 1942.

(Photographed by P. O. SWANBERG).



SHORE-LARK (*Eremophila alpestris*).

UPPER: MALE ON THE LOOK-OUT NEAR NEST. SVAIPA, SWEDISH LAPLAND, JULY 4th, 1942.

LOWER: NEST AND EGGS. SVAIPA, SWEDISH LAPLAND, MAY 23rd, 1942.

(Photographed by P. O. SWANBERG).

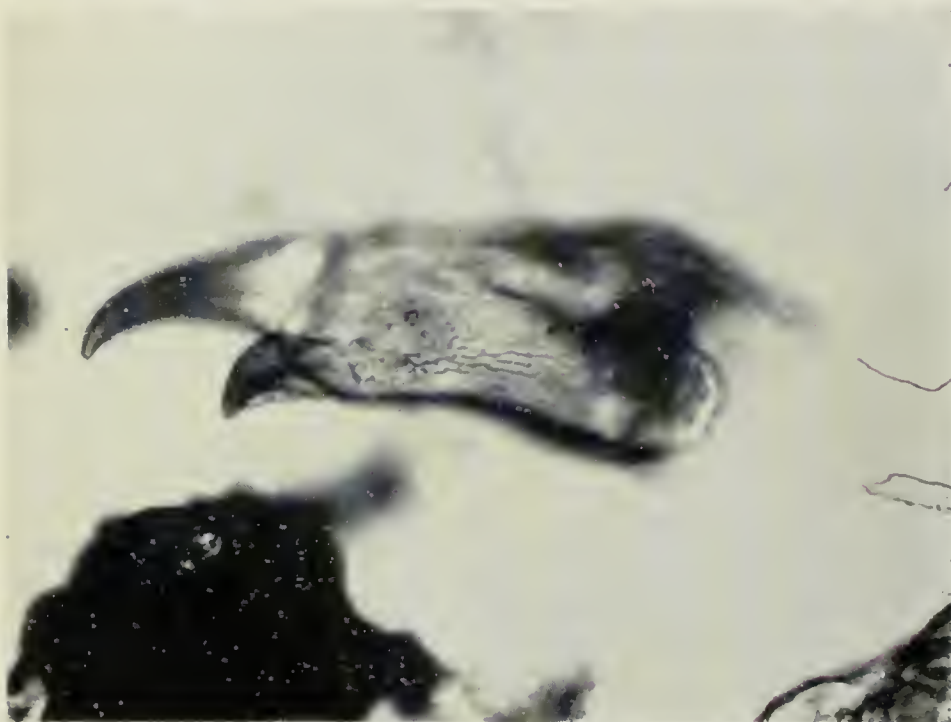
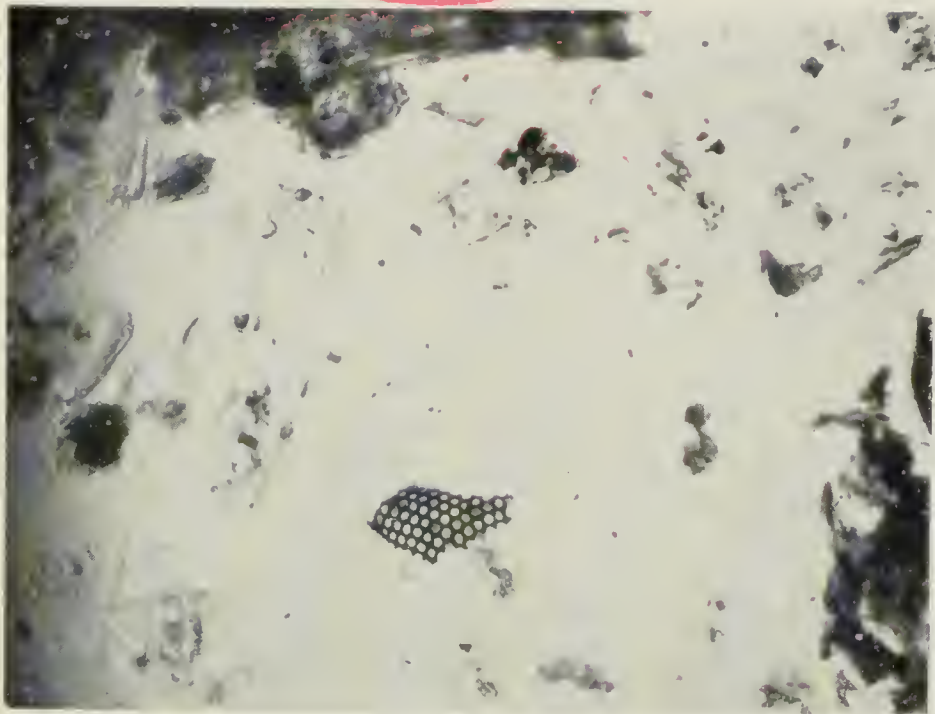


SHORE-LARK (*Ermophila alpestris*).

LEFT : FEMALE BROODING YOUNG IN NEST. SVAIPA, SWEDISH LAPLAND, JULY 10th, 1942.

RIGHT : YOUNG ABOUT TO LEAVE NEST. SVAIPA, SWEDISH LAPLAND, JULY 9th, 1944.

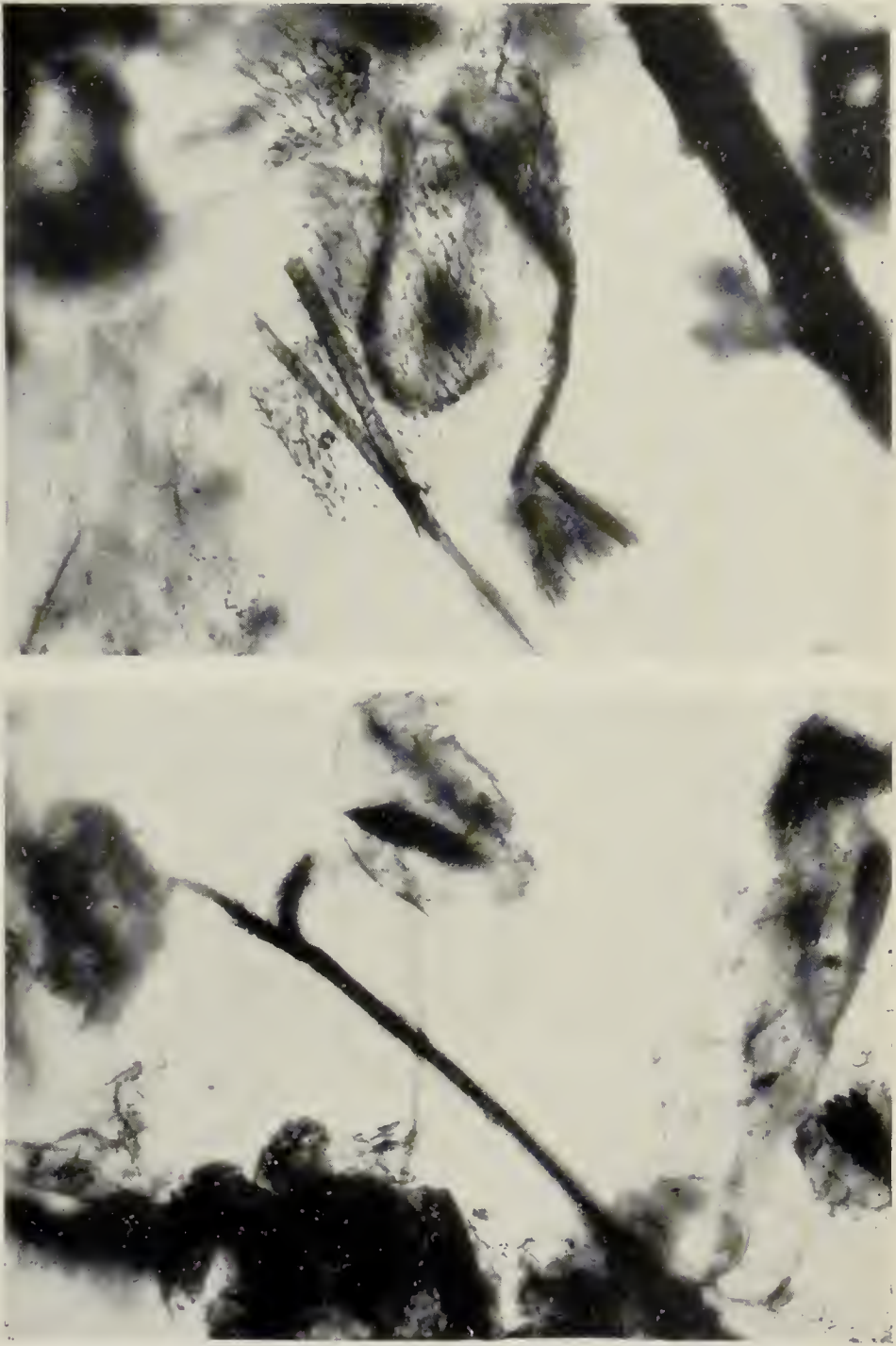
(Photographed by P. O. SWANPERG)



PHOTOMICROGRAPHS OF MATERIAL IN CASTINGS OF SHETLAND WREN
(*Trogiodytes t. zelandicus*).

UPPER : VARIOUS ARTHROPOD REMAINS, SHOWING A PIECE OF INSECT
COMPOUND EYE IN CENTRE.

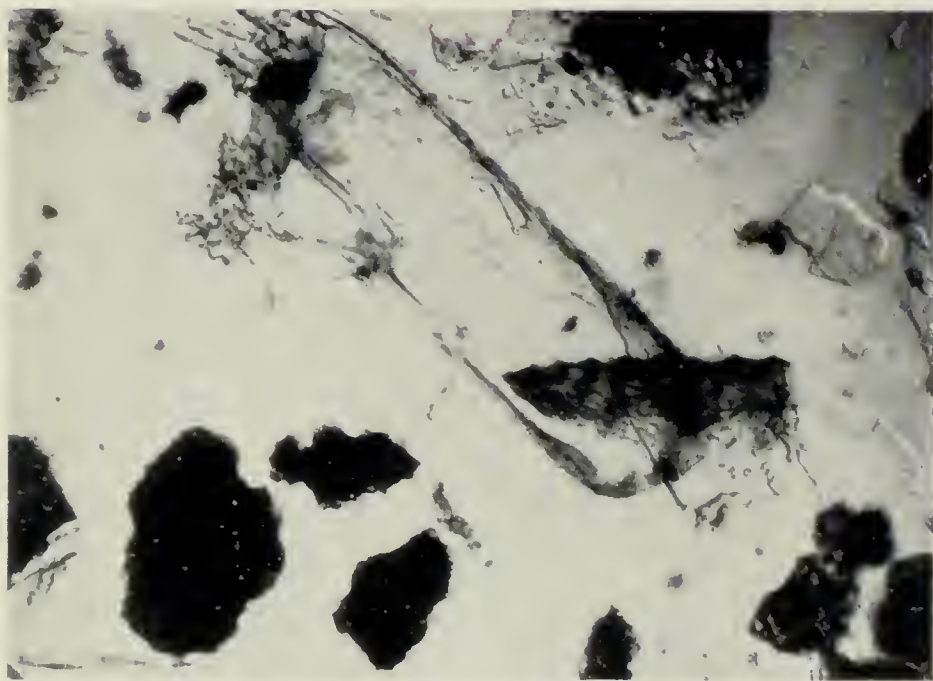
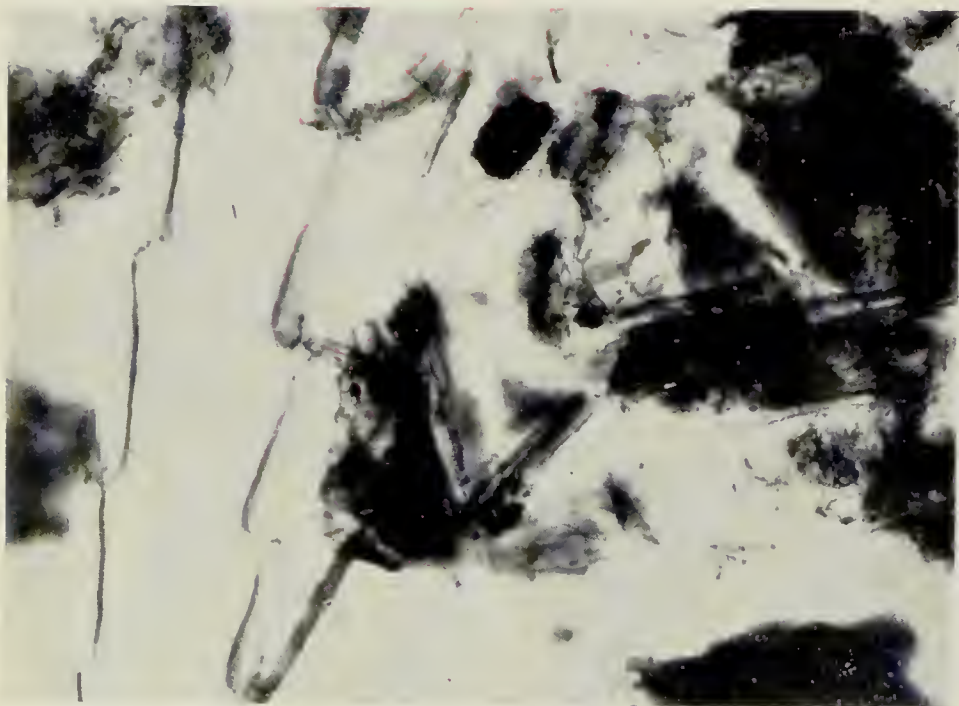
LOWER : PART OF *Apterygotan* (?) MANDIBLE.



PHOTOMICROGRAPHS OF MATERIAL IN CASTINGS OF SHETLAND WREN
(*Troglodytes t. zellandicus*).

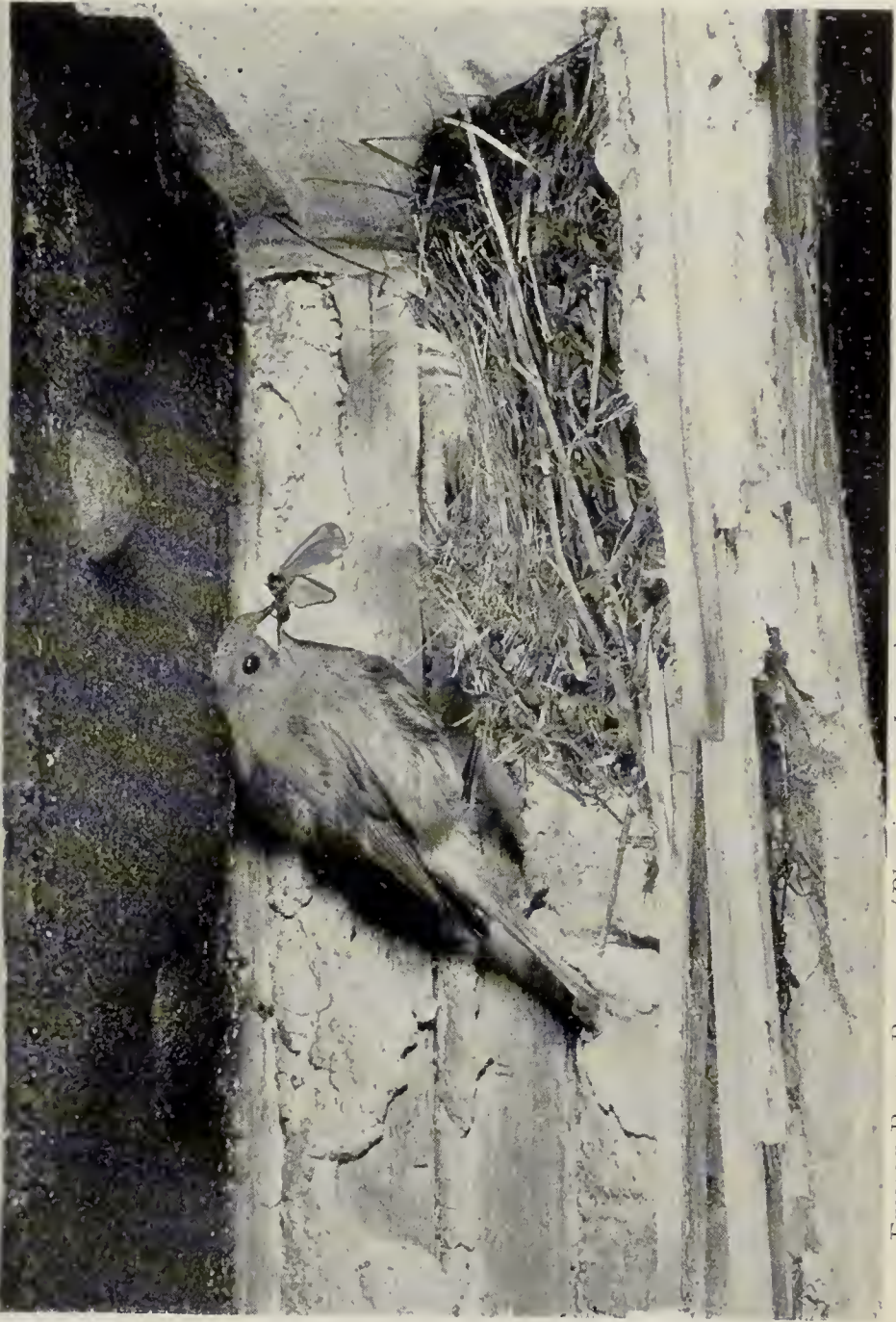
UPPER : PIECE OF WING OF A HYMENOPTEROUS INSECT.

LOWER : SUB-COSTAL VEIN FROM FORE-WING OF A CHALCID WASP.



PHOTOMICROGRAPHS OF MATERIAL IN CASTINGS OF SHETLAND WREN
(*Troglodytes A. zellandicus*).

UPPER : PIECE OF *Myriapod* ANTENNA.
LOWER : PROBABLE *Thysanuran* APPENDAGE.



FEMALE BLACK REDSTART (*Phoenicurus ochruros*) WITH CINNABAR MOTH (*Hypocrita jacobaeae*).

(Photographed by ERIC HOSKING).

(See page 102).



MARSH-WARBLER (*Acrocephalus palustris*) FEEDING YOUNG CUCKOO (*Cuculus canorus*). THE FOOD IS A SNOOT MOTH (*Hyphen proboscidalis*).

(Photographed by ERIC HOSKING).

(See page 102).

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XXXVII. THE SHORE-LARK.

Photographed by P. O. SWANBERG

(Plates 21-23)

WE are once again indebted to Mr. Swanberg for a series of plates, this time of the Shore-Lark (*Eremophila alpestris*). The pictures were all taken on a field near Svaipa in Swedish Lapland (Lat. $66^{\circ} 10' N.$) and show very well the bare stony nature of the nesting ground. Mr. Swanberg states that on the breeding grounds the species is "astonishingly watchful and cautious" and the nest is therefore difficult to find.

As a winter visitor to Britain the Shore-Lark has a very restricted distribution. *The Handbook* describes it as an "annual autumn to spring visitor, E. coast from Yorks. to Kent. Along S. coast occasional; elsewhere very rare." Over a fairly long period records would, no doubt, be found to conform generally to this picture, but over a short period, such as the post-war years, it would appear that only in E. Anglia has this species been a regular annual visitor. The fact that some wintered in north Kent in 1948-49 was considered an unusual event (*antea*, vol. xliii, p. 116). In that winter, however, they seem to have been more widespread than usual: three were recorded in Sussex in the autumn of 1948 (*Sussex Bird Report*, 1948, p. 6); a party of eight wintered at Gibraltar Point, Lincs. (*Report of Gibraltar Point Bird Obs.*, 1949, p. 16); there were several in Northumberland, including a party which reached 21 at its maximum seen on various dates from October, 1948, to April, 1949 (*Orn. Rep. for Northumberland and Durham*, 1948, p. 118, 1949, p. 112); and one at the Isle of May on October 30th, 1948 (*Scot. Nat.*, 62: 99). In Yorkshire (*Y.N.U., Committee for Ornithology Report*, 1948, p. 57, 1949, p. 8) there were several at Kilnsea and Spurn; the maximum being 29 in November, 1948; this party wintered and some birds were beginning to display by March 19th, 1949. It is to be noted that Mr. Chislett (*loc. cit.*) says of these records: "Authenticated records of the Shore-Lark of recent years in Yorkshire have been extremely few. I know of only three records in the past ten years." All this suggests that in certain parts of its winter range in Britain this species is a visitor only in favourable years. There is some evidence that the current winter, 1951-52, may be a good year. We should be interested to hear whether readers have found it so. Inland occurrences are very rare. It was recorded in Nottinghamshire in 1945; a second record for the same county (*Report on the Birds of Nottinghamshire*, 1946-1949, p. 11) is placed in square brackets as the bird was only heard in flight with Sky-Larks; it may be significant, however, that the date of this occurrence was January 30th, 1949.

J.D.W.

"CASTING" BY SHETLAND WREN NESTLINGS.

BY

E. A. ARMSTRONG AND W. H. THORPE, F.R.S.

ON the day when young Shetland Wrens (*Troglodytes t. zellandicus*) left their nest on Fetlar small quantities of a rufous-brown paste were noticed on a boulder under the entrance. Some of it was scraped off and later examined under the microscope. It was found to be composed mainly of arthropod remains in a triturated condition. Beyond reasonable doubt this material was voided orally by the young Wrens and fell directly on to the boulder. Unfortunately the situation of the nest on the inner side of an overhanging turf on a bank prevented direct observation of what transpired at the entrance so that it is not known whether the matter was ejected by the chicks directly out of the nest, whether it fell on the threshold and was then dislodged, or whether some was transferred from the beaks of the young to the beak of the parent. The first two possibilities would seem most likely, but once or twice as the bird flew from the nest after feeding the chicks, it seemed that some matter, not resembling a faecal sac, was visible adhering to its bill; although observations were made at a distance of a few feet the bird's movements were so quick that it was difficult to be certain of this. Four days before the young fledged the female was seen to fly down the slope and pick up a morsel two or three feet below the boulder on which the castings were found, and two days later she hopped out of the nest to almost the same spot, picked up a tiny brownish object and flew to the wire of a fence some 20 yards away where she apparently wiped it off, or, less probably, ate it. She frequently wiped off faecal sacs on this wire. It would have been possible for a morsel of the paste to have fallen from the nest to the place from which the bird picked up these objects. Thus one or other of the parents may have occasionally carried off some of it. That any was produced more than four days before the young fledged is doubtful. Apart from two or three days after the nestlings hatched white faecal sacs were regularly removed in the usual way. The young, which were already able to fly, left the nest when it was examined at 11.24 G.M.T. on June 22nd, 1950, but returned to it in the evening to roost. They were fed there as before. The brown paste was collected that evening. Among the prey fed to the young during the day was a centipede, two moths (apparently noctuid) and two green caterpillars, a daddy-long-legs (Tipulid) and, probably, a stone fly. It will be noted that microscopic examination of the material revealed the remains of such organisms as these.

When mounted in Euparal and examined under the microscope the paste was found to contain occasional quartz grains, probably from the sandy soil, and a great deal of calcium carbonate. Since Molluscs and Crustacea were absent from the material carried in by the parents, (the organisms consumed by the young Wrens were not such as to provide great excess of this substance), one can only

suggest that it may have originally formed the shells of molluscs and, reduced to powder, been picked up by the Wrens while searching for prey. From the eight day nestling Great Tits (*Parus major*) were given beakfuls of sand by their parents (Kluijver 1950). Perhaps, therefore, the Wrens intentionally brought this mineral matter to their chicks although they were not seen to visit the nest without prey. The nest was only a few feet from the sea and some yards from a stream frequented by the foraging Wrens which were seen poking into crevices in its banks near the water.

By far the greater part of the paste consists of remains of arthropod skeletons; in regard to much of the material it is difficult to determine the organisms to which the fragments belong and to make a thorough examination would be a very laborious task. Nevertheless, many of the remains can be identified with sufficient certainty to give a fairly clear picture of the food which had been brought to the young birds.

Firstly, wing-scales derived from moths are very abundant in the castings. Clusters of them appear entangled in delicate membranes which probably represent the remains of the skins of insect larvæ. Some of these skins show bristles which seem to belong to lepidopterous larvæ, and here and there are to be found remnants of the mandibles of such larvæ. There is also what appears to be the head capsule of a small moth.

Next to Lepidoptera the Hymenoptera are the most obvious constituents. It is possible to identify with certainty the remains of front wings of a Chalcid wasp and there are also a number of pieces of compound eye which probably belong to Hymenoptera. Segments of the abdomen of an adult caddis fly (Trichoptera) of some small species can be identified with fair certainty. Other fragments which show traces of spiracles probably belong to a coleopterous larva. Various heavily sclerotized plates apparently come from some small Coleopteron, possibly a weevil. There are also a large number of objects which look like the limbs and appendages of a small Thysanuran as well as some pieces which suggest remains of small stone flies (Plecoptera), but it is not possible to be certain about these.

Apart from insects one finds numerous structures which are, apparently, jaws of a small Chilopod (centipede) and other objects which can be identified with considerable probability as Myriapod antennæ. There are also the remains of what appears to be the abdomen of a small spider or phalangid as well as tarsi of the same.

No remains of Diptera have been identified in the castings—neither can any fragments of wood lice or other isopod crustacea be traced and there are no indications of molluscs having been eaten by the young Wrens. The absence of crustacean and molluscan remains is not surprising since, as mentioned above, no such organisms were noted among the prey brought to the nest; but as quite a number of winged insects were seen in the parents' bills it is

remarkable that no remains of Diptera were identifiable. The foraging and breeding behaviour of these Wrens is discussed elsewhere (Armstrong in press).

The paper by Tucker (1944) on the ejection of pellets by passerine and other birds is well known but so far as the writers are aware no review of such behaviour by nestlings has been published. Evetts (1932) mentions the ejection of insect remains by a Nightingale (*Luscinia megarhyncha*), Whitethroat (*Sylvia communis*), Sedge-Warbler (*Acrocephalus schænobænus*), Grasshopper-Warbler (*Locustella naevia*), Pied Wagtail (*Motacilla alba*) and Wheatear (*Enanthe ananthe*). The chicks were taken from the nest at nine days and kept for some weeks, but the age at which they first ejected pellets is not mentioned. Probably aviculturists could provide further information. Miller (1950) refers to a nestling California Shrike (*Lanius ludovicianus gambeli*) which on its third day disgorged a pellet containing parts of dermestids, the muscular digestive tracts of snails fed to it earlier the same day, and the femur of a grasshopper. Young Black-collared Barbets (*Lybius torquatus*) "cast" chitin and the pips of fruit (Skead, 1950). A photograph of Rooks (*Corvus frugilegus*) by Hosking (1946) shows the parent seizing a casting from the beak of a nestling. Possibly a pellet containing beetle elytra beside the nest of a Short-eared Owl (*Asio flammeus*) (Armstrong and Phillips, 1925) was voided by one of the owlets.

It may be appropriate to mention here some puzzling information sent to one of us (E.A.A.) in regard to the behaviour of European Wrens (*Troglodytes t. troglodytes*). In 1948 he received letters independently from Mrs. G. A. Morris of St. Albans and Mrs. T. Silva of Sevenoaks, Kent, describing the peculiar procedure they, and others with them, had observed at Wrens' nests that summer. Mrs. Morris wrote that she and a friend had repeatedly watched "a white substance the size of a small marble" being removed by a parent Wren from the mouths of nestlings. The nest was watched from the time it was built until the young fledged and the removal of the white substance was first seen to take place about 10 days before the chicks left the nest. The procedure took place "many times an hour." As the nest was close to a window the birds were sometimes watched from a distance of only a few inches. The evening before the young flew they were seen to defecate out of the entrance. The other observer, Mrs. Silva, wrote that she and two others watching with glasses from a distance of 12 feet, saw Wren nestlings pass what they took to be white faecal sacs to the parents, using their beaks. She first noticed this behaviour on June 14th; the young left on June 18th. She says, "I saw it happen three times in two minutes and every time I watched, it occurred frequently."

There is no mention of a chick being seen to pick up a faecal pellet which had been already voided. This is strange if the objects passed were really faecal sacs. On the other hand, if the substance

was indigestible material "cast" orally, it is odd that it bore so close a resemblance to faecal matter, and unaccountable that defecation in the ordinary manner should not be noted at all. Both correspondents answered detailed queries but the problem of what really occurred has not been resolved. Young Crowned Hornbills (*Tockus alboterminatus*) will pick up dung and drop it from the aperture of the nest (Moreau and Moreau, 1940) and a Willow-Warbler (*Phylloscopus trochilus*) has been observed to lift a sac from the nest and drop it on the rim (Tucker, 1941) but we know of no record of any passerine regularly picking up faeces and passing it to the parent in its beak.

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HIGH SPEED PHOTOGRAPHY AS AN AID TO THE IDENTIFICATION OF PREY—II.

BY

ERIC HOSKING AND STUART SMITH

IN a previous note (*antea*, vol. xlii, p. 358) we drew attention to the fact that high-speed flash photography of birds feeding young, frequently enables the prey to be identified because greater clarity is obtained when very short exposures are used.

During the past year (1951), Hosking has used this method of photography on many species, but two of these have been of especial interest, and we have singled them out for presentation in this paper. The species were the Black Redstart (*Phœnicurus ochrurus*), and the Marsh-Warbler (*Acrocephalus palustris*), with a pair of the

latter feeding a young Cuckoo (*Cuculus canorus*) at one of the nests photographed.

Identification of the prey was kindly undertaken for us by Mr. Harry Britten, who dealt with all the *Arthropoda* except the *Lepidoptera*. The latter were kindly identified by Mr. H. W. Michaelis of Didsbury. We are indebted to N. J. Wadley for kindly showing to us the Black Redstart's nest, and to Philip Brown for the Marsh-Warblers' nests.

The Black Redstart.

The nest was in the City of London, literally within the shadow of St. Pauls. The photographs were taken on four days, namely June 16th, 17th, 23rd and 24th. It is obvious that here is a most interesting ecological association, for the Black Redstart in London is a bird whose spread has been facilitated by "blitzed" areas, both from the point of view of nest sites and the provision of insect food, which in its turn is associated with the colonising plant life. Fitter (*London's Natural History*, Collins, 1945) has dealt fully with the spread of this bird in London, and in the same book gives Salisbury's list of the flowering plants and ferns of bombed sites in London.

Of 34 prints submitted for identification, 21 showed prey with sufficient clarity for a positive identification to be made. Of these 21, no less than 15 were the Cinnabar moth (*Hypocrita jacobææ*). The host plants for the larvæ of this moth are the ragworts, both of which are found on bombed sites. The Oxford Ragwort (*Senecio squalidus*) is the commoner, and Salisbury found it on 56 per cent. of the sites he examined.

The moths were fed to the young direct, with wings still intact. In no single instance were any larvæ of the Cinnabar moth fed to the young. This is probably due to the aposematic colouring of the larvæ, whose black and yellow bands are said to act as a warning to birds. It was not verified, however, over the period during which the photographs were obtained, that Cinnabar larvæ were present on the ragwort plants, although it seems highly probable that they were there.

Of the other prey, the following were identified: Centipede, Myriapoda; (*Lithobius*? sp.), 3 cases; Hover-fly (*Syrphus*? sp.); Leather-jacket grub (larvæ of *Tipulidæ*); Click Beetle (*Elateridæ*? sp.); and a beetle, (probably *Bembidion*).

The Marsh-Warbler.

Photographs were taken at two nests, main interest being centred on one which contained a young Cuckoo. This nest was worked on July 12th and 13th, and the following prey were fed to the young Cuckoo: Mother-of-Pearl Moth (*Notarcha ruralis*, Scop.), 4 cases; Yellow Shell Moth (*Euphyia bilineata*, Linn.), 4 cases; The Snout Moth (*Hyphenia proboscidalis*, Linn.), 3 cases; Noctuid Moth (? sp.); Geometer Moth (? sp.); Plant Bug (*Lygus contaminatus*, Flu.); Dipteron (*Scopeuma*, ? sp.); Larval Plant Bug; Crane Fly

(*Tipula*, ? sp.); Microlepidoptera (? sp.); Common Downlooker Fly (*Rhagio scolopacea*, Linn. ♂).

At the second nest, containing young Marsh-Warblers, photographs were taken on June 29th. The following prey were identified: Scorpion Fly (*Panorpa germanica*, Linn. ♂); Hover-fly (*Syrphus*, ? sp.); Scorpion Fly (♀ ? sp.); Small Crane Fly (*Tipula*, ? sp.), 2 cases.

All the moths and flies were fed to the young Cuckoo, and to the young Marsh-Warblers, with the wings intact.

Both the Mother-of-Pearl Moth and the Snout Moth have the nettle as a host plant, and this was abundant in vegetation near to both nests.

Two selected illustrations show: (1) a hen Black Redstart with a Cinnabar Moth; and (2) Marsh-Warbler feeding a Snout Moth to a young Cuckoo.

NOTES.

The Display of the Blackbird.—During observations on four pairs of Blackbirds (*Turdus merula*) in 1949, and on the same four pairs with the addition of another in 1950, the following display was noted. All of the birds concerned were recognizable in the field and no display was noted unless the identity of the birds taking part was known. In the summer of 1950 two of the males were colour ringed.

COURTSHIP DISPLAY.

(a) Between the members of a pair. Frequently in the first six months of the year the male of a pair will display at his female although they may have been mated for months or even years. With drooped wings, depressed and fanned tail, and raised rump feathers he either runs before or perches beside his female. In January, February, or March he almost always sings with his head swaying from side to side before the female, but as the breeding season commences and the birds become occupied with feeding the young the display loses a great deal of its intensity and there is seldom any song. The female usually ignores her mate, but occasionally she will attack him.

(b) Between a mated male and an unmated female. In winter there are always a few unattached birds, mostly immatures, resident in the breeding territories, and on rare occasions the mated breeding male may display to a female among them. The display is the same as the above except that the female, who normally expects to be chased by the male, will never attack him. Occasionally the male's female is near by, but she seldom shows any signs of jealousy, usually being content to watch.

THREAT DISPLAY.

I. On the border between two territories :—

(a) Between the two males. On meeting, one will retreat followed by the other. When the first reaches a certain point he turns. The second then retreats until he reaches another point where he turns and again becomes the pursuer. This may continue for several minutes and, if neither tire, may end in a fight.

(b) Between the two females. The procedure is exactly the same as the above except that they seldom keep up the behaviour for very long. They either fight or part soon after they meet.

(c) Between an opposing male and female. When a male of one pair meets a female of the other he will almost certainly do one of two things. He may run towards her with raised crest and rump feathers, drooped wings, depressed and fanned tail, and frequently a wide open bill. The female either flees before him or remains and faces him with head and tail up. Should she do this there will almost certainly be a fight. On one occasion I watched a male displaying so violently that he apparently could not see clearly and the female took advantage of this, buffeting him mercilessly.

On the other hand, especially if it is not the breeding season, the male may attack the female without displaying at all. Again she will either flee or fight.

II. Between a territory owner and a trespasser :—

The sex of the birds concerned is immaterial as the display will almost always be the same. The owner, with slightly lowered wings and lengthened neck runs or hops towards the trespasser. The latter immediately raises its crest, which gives it a very dejected appearance, and retreats, usually calling a low "seep." This will continue until the owner tires or the trespasser leaves the territory. Sometimes, and almost always in the breeding season, a male owner will give a more elaborate display with depressed tail and raised rump feathers and may even sing at a trespassing male, but such behaviour is unusual.

SUMMARY.

An account of the courtship and threat displays witnessed during observations on a selected population of Blackbirds is given in most of the circumstances in which they occur. Due to the variability and similarity of many of the displays it is often impossible to give an accurate account of any seen unless the identity of the birds is known.

R. D. JACKSON.

We have received accounts of displays by Blackbirds from Messrs. Ian H. Drummond, W. G. Hale and B. L. Sage. As these are all accounts of isolated observations whose context is obscure or uncertain we are filing them for reference. We feel that the value of Mr. Jackson's account is that it is based on a long series of observations.—Eds.].

Flight behaviour of Spoonbill.—With reference to the note (*antea*, vol. xlv, p. 177) on the flight behaviour of Spoonbill (*Platalea*

leucorodia), the following note made at Walberswick, Suffolk, on May 16th, 1947, may be of interest: "Flock of 16 Spoonbills alternated between flying in file and flying abreast in line formation. Much aerial banking. Odd birds would soar to a considerable height above the main body, sometimes nose-diving spirally on partially outstretched wings, often slightly at the bank, not very unlike a Lapwing (*Vanellus vanellus*). Occasionally a bird would zig-zag in flight right across the main body (when in line abreast formation) from one flank to the other. Frequently the birds would effect a rapid change from Indian file formation to line abreast and *vice versa*, several times coming right over me so that I was looking up at the spatulate bills from below. Birds invariably settled on the margin of a large shallow lagoon surrounded by *phragmites* beds. Once one swam around in a wide circle, close in to the reeds, snapping its mandibles together."

G. HAROLD HUNT.

Red-crested Pochards in Suffolk and Norfolk.—The following reports have been received of Red-Crested Pochards (*Netta rufina*):—An adult drake at Benacre Broad, Suffolk, on January 28th, 1951 (Paul D. Kirby); a female at Hickling Broad, Norfolk, on May 5th, 1951 (G. R. Mountfort). It is possible that these birds originated in London where, as Mr. W. G. Teagle kindly informs us, two pairs bred in St. James' Park and one pair in Regents Park in 1950. The young were left unpinioned, and in the following winter Red-crested Pochards were recorded in 3 localities in London. At least three pairs bred in St. James' Park in 1951 and again the young were unpinioned. Some of these have been seen on the Round Pond. On the other hand, the species is now visiting Holland in much larger numbers than formerly, a flock of up to 500 being present in winter on the Yssel Meer. Holland seems just as likely a place of origin for these E. Anglian birds as London.

The spring movements of the Northern Golden Plover.—An article (*antea*, vol. xliii, pp. 362-363) by Dr. J. H. Sheldon records the frequent occurrence of large flocks of Northern Golden Plovers (*Pluvialis apricaria altifrons*) on spring passage in certain fields near Wolverhampton, Staffs. We have received reports from a number of observers describing similar gathering grounds or halting places elsewhere, and these reports are summarized briefly below. It should be stressed that the fields watched by Dr. Sheldon are the regular winter haunt of a flock of Golden Plovers (of unknown race) which depart before the Northerners appear towards the end of March or early in April. In most of the cases reported below occupation of the feeding grounds is more or less continuous though there may be an increase in the number of birds present towards the end of March. There is, however, insufficient evidence to say definitely that these haunts are merely "halting places."

CO. ANTRIM.—Massereene Park: a flock of approximately 1,500 Golden Plovers on April 21st, 1940, all apparently Northerners; a flock of c. 2,000 on

March 23rd, 1941, contained many birds already well advanced into breeding plumage of the Northern race; a flock of 60-70 on April 26th, 1942, were probably Northerners (M. Neal Rankin).

CO. DONEGAL.—Carrickart: a flock of 150 Northerners on April 23rd, 1943 (M. Neal Rankin).

ANGLESEY. Malltraeth: a flock of c. 400 Northerners from April 13th, 1950, to the end of the month, by which time numbers had dwindled to 22 (David Jenkins).

LANCASHIRE.—Mr. E. Hardy reports that from 1929 to 1942 he made annual observations at assembly grounds in an area of S.W. Lanes., including Walton Sewage Farm, Eccleston Mere and fields near Halewood. He found flocks assembling at the end of March, increasing up to c. 400 by mid-April (once 800) and then declining rapidly at the end of the month. Mr. E. E. Preece has sent records from Halewood, a wintering ground, where in April, 1949, Northerners generally outnumbered Southerners, at least 20 still being present on April 30th. Mr. R. Atkinson reports a flock of c. 300, apparently all Northerners, near Manchester, on April 29th, 1951.

CHESHIRE.—Mr. E. Hardy refers to assembly grounds at Storeton and Meols in Wirral. There are many other wintering places in Cheshire to which there is a fresh influx, usually in April and mainly of Northerners; among these haunts are a group of fields at Newbridge Hollow, near Altrincham—in use for over 40 years—and fields at Bartington, Whitley Reed and Appleton (A.W.B.).

LEICESTERSHIRE.—Mr. M. K. Howarth has sent us a summary of observations at a large aerodrome in S.W. Leics. This is a wintering area, but when the races are distinguishable in April, Northern birds outnumber Southern by three to one. His paper appears in *The Birds of Leicestershire and Rutland, Report for 1950*, pp. 13-15.

WARWICKSHIRE.—Flocks of Golden Plovers appear at Castle Bromwich aerodrome in mid-March; in April, 1949 and again in 1950 a proportion of the birds has been identified as Northern. Sixteen were present on April 30th, 1950. Some Northerners were also identified at Baginton in April, 1950 (R. W. M. Lee, M. J. Rogers).

SOMERSET.—Mr. Alan T. Rees has supplied records of Golden Plovers seen on the Lansdown Ridge, near Bath, in 1947-1950. He has no figures for April but gives evidence of marked passage in March and again in October, with some birds apparently wintering.

REVIEWS.

British Bird Books: An Index to British Ornithology, A.D. 1481 to A.D. 1948. By Raymond Irwin (London, Grafton & Co., 1951. 63/-).

The title of this book gives a very inadequate idea of its contents since it indexes and classifies, not only books, but chapters in books, scientific papers and articles in magazines and newspapers. It thus constitutes a guide to the literature of British ornithology, not merely to books on the subject.

It is divided into five parts, the first of which contains general literature classified in 20 sections, which deal respectively with Bibliography and History; Periodicals; Early Works to A.D. 1800; Handbooks and Reference Works (since 1800); Taxonomy, Classification and Nomenclature; Biology and Evolution; Anatomy, Physiology and Plumage; Economic Ornithology; Ecology; Breeding Biology, Display, Habits and Behaviour; Nests, Eggs, Incubation and fledging; Migration, Ringing and Bird Observatories; Flight; Territory; Song; Photography; Protection and Nature Reserves; Bird Watching; Game Birds and Wild Fowling; and Falconry.

Most of these sections appear to include most of the more important papers on the topics with which they deal, including articles published in America or in Europe, and they will obviously be valuable as guides to students. But we think the section on Periodicals, which is said to be "a select list of periodicals in constant use," is most unsatisfactory and misleading. No less than nine

of the sixty journals listed expired over 50 years ago. Four American journals are included, but not a single one published in any European country. Of nine local ornithological societies in England which publish annual reports on the birds of their area only one is included, and of a further 22 Societies which publish an annual bird report only eight, whilst several natural history journals which only rarely contain anything on birds are nevertheless included.

The second part of the book is geographical and lists the literature dealing with provinces of the British Isles in 14 sections. Each section is headed with a list of some of the principal libraries, museums, nature reserves and local societies in the area. Here again the treatment is unequal. Of the societies in the south-west Bristol and Cornwall are noted as producing annual reports on birds but there is nothing to show that Devon, Lundy and Somerset also do so. We have also noted some important omissions from some of these sections, e.g., Evans' account of Cambridgeshire birds in the *Victoria History* and Blathwayt's list of the birds of Lincolnshire in the *Lincs. Nat. Union Trans.*, 1914, which are the latest lists for those two counties.

Part III contains a systematic list of British birds with references to papers or chapters on individual species or small groups of related species and to works in which there are photographs of these species. This seems likely to prove much the most useful part though the references are preponderantly to works published in Britain, many of the sections not containing a single reference to any Continental papers.

Part IV is an index of authors with titles of their works and is stated to provide "a complete list of all material relating to British Birds, including many items not appearing in Parts I-III." Unfortunately this claim is not borne out on examination. The two articles which we have noted as missing from Part II are not in this section either, and here again there are hardly any references to books on birds on the British list published abroad.

Part V contains a very full index of subjects, species and places and there are Appendices giving addresses of natural history societies and supplementary literature published in 1949 and 1950.

Obviously this work will be of great value to all serious students of British bird life, but we think it would have been much more useful if it had concentrated on the more recent literature and not attempted to cover again the field already covered in the "Geographical Bibliography of British Ornithology." It might then have been produced at a rather lower price, for we fear the present price will prevent its purchase by many who would find it useful. W.B.A.

Sexual Behaviour in Penguins. By L. E. Richdale. (University of Kansas Press, Lawrence, Kansas, 1951. U.S. \$6.00.)

Mr Richdale here presents the results of ten years intensive field work (up to 1946) on the Yellow-eyed Penguin (*Megadyptes antipodes*), undertaken at a number of colonies situated within about 20 miles of his home at Dunedin, New Zealand. During the last four of these years nearly 700 visits were made, many of them overnight or longer, at all seasons of the year. (Each visit, if I am correctly informed, entails a hair-raising descent of the cliffs to the foreshore below, made with the help of sundry remote but reasonably secure pieces of wire and old bedsteads.)

Penguins may be caught, and handled judiciously, for examination, weighing and ringing. Mr. Richdale's rings are numbered in four places, and the figures are large enough to be legible through a telescope at 120 feet. Between four and five hundred birds have been marked to date. The individual fortunes and relationships of 88 males and 96 females are here pursued over varying numbers of years, through 292 matings.

The author must at times have felt almost overwhelmed by the mass of accumulated observations at his disposal. The material is presented in ten chapters, each dealing with a particular part of the reproductive cycle. Each chapter is completed by a useful summary, and also contains a discussion of comparable phenomena in other species of penguins, as well as in less closely related birds. Here the author has drawn upon his own concurrent

experience with the Erect-crested and Little Blue Penguins, the Royal Albatross and other petrels, and also upon a wide variety of modern studies of reproductive behaviour in birds. His general method and approach remind one especially of Mrs. Nice's "Studies in the life history of the Song Sparrow," to whose distinguished author he makes generous acknowledgment.

An interesting aspect of the book is the attention it focuses on "the pre-egg stage," the period between the birds' arrival at the breeding place and the commencement of actual reproduction—a particularly long and notable period in many penguins and petrels. It is not easy to explain why such birds as the Fulmar, for example, begin to haunt prospective breeding sites two to six months before the egg is laid; or what the adaptive value may be of spending such a period or longer at a breeding colony, without actually breeding at all, as happens in a proportion of cases. Mr. Richdale's account throws new light on the importance of this phase, not only in such generally accepted matters as establishing territory, and pair-formation, but in building up the bond between mated birds, until it is strong enough to withstand the long severe strain of the breeding season without breaking; and possibly most of all in establishing the social community as an entity, and at the same time the position and membership of the individual birds and pairs within it. Mr. Richdale has since written important studies of the pre-egg stage in Buller's Mollymawk (1949) and in the Albatross family (1951), both of which have actually seen publication ahead of the present work, and are issued by him at 23 Skibo Street, Kew, Dunedin, S.W.1, New Zealand.

The book is a mine of interesting information, and one must be careful not to give a false impression by picking out odd points at random. My eye was caught, for example, by the conjecture that mated pairs of petrels, etc., may keep in contact while they are at sea outside the breeding season (p. 71); and by the fact that the gay head plumes and patterns of penguins in general serve for species-recognition and have no function in courtship (p. 75). The annual cycle of body weight is most interesting (p. 96 *et seq.*): there is a fall in weight before egg-laying, a slight rise during incubation and the early feeding of the young; but as the two chicks grow bigger the parents' body-weight appears to drop on account of the heavy demands then made on them. Once the young have departed, the parents' weight shoots up and reaches a peak at the onset of the moult. They must then stay ashore fasting for a month and a half, which brings them to the lowest point in the cycle, after which they can recuperate once more during the winter months.

In the matter of determination of clutch size we learn that a female, who lost her mate when the chicks were already large, had grave difficulty in meeting their minimum requirements unaided; and the author comments that "it is obvious that one parent cannot feed two young successfully," thus providing an important instance among sea birds of Lack's general conclusions on this interesting subject.

The outstanding importance of the book is the source it provides of original and co-ordinated observation. As it becomes known it will make an increasing contribution to our general understanding of reproductive behaviour in birds. The author has successfully accomplished his difficult task of presenting the great mass of detail in a form available to others, and it is no doubt through them that its full worth and significance will gradually emerge.

The University of Kansas Press deserve a word of praise for their skill and competence in producing it. Not only are the binding, paper, printing and illustration of first-rate quality, but, to the best of my knowledge, the text is entirely free from editorial or printers' errors. V.C.W.-E.

LOCAL REPORTS: SEVERN PROVINCE

Ornithological Notes, Bristol District, 1950. Ed. H. H. Davis. (*Proc. Bristol Nat. Soc.*, xxviii, pt. II, pp. 177-192).

This is the fifteenth of a series of annual reports covering N. Somerset and S. Gloucestershire; this issue includes some records from Steep Holm in the Bristol Channel. As the area includes the New Grounds this report incorpor-

ates the important observations made there under the auspices of the Severn Wildfowl Trust. Among the scarce species recorded but not previously mentioned in our pages we note a Firecrest at Blagdon on December 10th, a Night-Heron at the New Grounds on September 4th and two Water-Pipits—New Grounds, Glos., February 25th, Blagdon Res., Som., October 29th—the second of which was seen on the same day as a Rock-Pipit; records from other parts of the country (see below) suggest that these two races migrate together. Other notes amplify what has already been published in our pages. There is, for instance, an additional record of a Hoopoe (Doynton, Glos, April 4th-10th); while two more records of storm driven Gannets (*cf. antea*, vol. xlv, p. 314) and records of Manx Shearwaters far up the Severn estuary give further evidence of the effect of the mid-September gales; a Red-crested Pochard at Cheddar on September 24th may have been an escape (*cf. p. 105*).

Among the geese at the New Grounds were an adult pair and an immature Lesser White-fronted Goose, January-March, and a single adult again in December, as well as a family party of five White-fronts of the Greenland race till March and two parties at the end of the year. There is also a report of 127 Pintail off the New Grounds on December 30th. Most of the other figures for ducks come from the Somerset reservoirs, where Teal were unusually numerous at the end of December. Records of more local interest include the second Black-throated Diver for the area—this bird, incidentally, arrived at about the same time as those reported (*antea*, vol. xlv, p. 30) in Berkshire and the Midlands—a spring record of Curlew-Sandpiper, several Glaucous Gulls and many records of Buzzard which is stated now to be resident over a wide area in N. Somerset.

J.D.W.

Cheltenham and District Naturalists' Society: Ornithological Report, 1948-1950. Compiled by L. W. Hayward.

This short cyclostyled document is, we understand, intended to be the forerunner of a more ambitious report on that part of Gloucestershire not covered by the Bristol report. We welcome this first step towards filling one of the important remaining gaps in the series of county reports and are glad to note that suggestions are made for special study of locally distributed species.

This report records the breeding of both Marsh-Warbler and Buzzard in the area during 1950, and there is a record of a Red-necked Phalarope at Hewletts reservoir during the phalarope invasion.

J.D.W.

The West Midland Bird Report, No. 17 (1950). Ed. C. A. Norris.

With 450 members and 99 contributors to its report the Birmingham and West Midland Bird Club may justly claim to have provided a first-rate ornithological organization for Warwickshire, Worcestershire and Staffordshire. One of its activities has already been reviewed at length in our pages (*antea*, vol. xlv, p. 421); another, described in this report, is the operation of a Heligoland type trap at a rickyard in S. Birmingham where 456 birds of 17 species were caught in a year. The Club has also taken a big part in the study of visible overland migration. There is no special report on this subject but observations are recorded under species headings in the classified notes. Particularly detailed work has been done in the Tame valley in N. Warwickshire by Messrs. G. A. and M. A. Arnold. It is of interest that they noted a large immigration of Starlings from October 10th, "with the peak from October 22nd to early November," an observation that fits in well with records made elsewhere and mentioned in our pages (*antea*, vol. xlv, p. 247). Redwings also appeared first on October 23rd and for this species the period October 20th-24th seems to have been a peak elsewhere in Warwickshire. Fieldfares, on the other hand, were not noted in the Tame valley until October 28th, though movement was noted in Birmingham on the 23rd. Other notes add to published data on the effects of the September gales: there are two records of Manx Shearwaters, one in Warwickshire on September 16th and one in Staffordshire on the 10th; a Leach's Fork-tailed Petrel at Bartley, Warwickshire, is an addition to the published list (*antea*, vol. xlv, p. 314), but the date, November 25th, is much later than the others; it also appears from the classified

notes that the movement of Common and Arctic Terns on September 17th was more pronounced in Warwickshire and Staffordshire than our report (*antea*, vol. xlv, p. 318) suggested.

Mention has already been made in our pages of some of the unusual species reported in this area, such as Hoopoe, Greenland White-fronted Goose, Ferruginous Duck, Black-throated Diver and Great Snipe. There are several records of rarer waders from the Staffordshire reservoirs, a Temminck's Stint on May 11th, a Kentish Plover on September 13th and a Dotterel on August 24th, the last at about the same time as a party was recorded at London airport. Seven Grey Plovers in September may also have been part of a larger movement. These reservoirs are now important centres of observation and it is therefore useful to have Mr. Rogers's summary of records of passing migrants, waders and waterfowl at Bellfields (= Belvide), a reservoir which has been watched with some regularity for a number of years. It is claimed that Bellfields has "more records of Water-Pipit than any other locality in the British Isles", and the fact that nine were recorded in 1949 lends substance to this view. Elsewhere in the report are records of both Water- and Roek-Pipits, the latter from all three counties.

Species which are spreading in the area include Pied Flycatcher and Buzzard; the latter we are informed in the introduction is now nesting in Warwickshire as well as Worcestershire, though the classified notes for the former county are, perhaps intentionally, vague on the point. Two pairs of Ravens nested in Worcestershire and the Wood-Lark was recorded in Warwickshire "for the first time for many years." Mention must also be made of a remarkable story of a Tawny Owl which, for no apparent reason, uprooted and carried off white wooden plant labels in a garden at Studley College, Worcs. J.D.W.

OUSE PROVINCE

Suffolk Bird Report for 1950: Supplement to vol. vii, part II of *Transactions of the Suffolk Naturalists' Society*. Price 5s.

The Lowestoft and North Suffolk Field Naturalists' Club: Fifth Annual Report (1950).

Great Yarmouth Naturalists' Society: First Annual Report (1950).

Until comparatively recently Suffolk was an ornithologically neglected county, occasional records from which were published by Norfolk ornithologists. Then the late Dr. C. B. Tiechurst published an excellent account of its birds. During the last few years the Lowestoft Club has published annual records from the north-east of the county and the Royal Society for the Protection of Birds has published details of observations on its two coastal sanctuaries, Minsmere and Havergate Island. Now we welcome the first annual report covering the whole county, which has been edited by Dr. P. R. Westall. Apart from a brief introduction and a list of contributors it consists entirely of annotated notes on species recorded during 1950, which totalled 203, with six more in brackets not fully authenticated or probably escapes. A brief account of the status of each species in the county precedes the records of observations for the year.

The Avocet is undoubtedly Suffolk's star bird at present and the R.S.P.B. provides a statement showing that at least 21 pairs nested and that on August 13th at least 79, and possibly 85, birds (adults and young) were present. As a very minor point we note that though the R.S.P.B. statement begins by recording the first arrival on March 18th and ends by recording two still present in the first few days of October, individual records quoted later show that one was seen on March 12th and one on October 29th.

Rare visitors recorded include a female Red-crested Pochard on Easton Broad from February 18th to March 1st, a Red-necked Phalarope in breeding plumage at Minsmere from May 24th to 28th and a Yellowshank, also at Minsmere, on August 26th. A Great Grey Shrike seen at Akenham on May 19th is only the second recorded for this month in Suffolk.

Three pairs of Black Redstarts nested at Lowestoft, of which fuller details are given in the local report. As far as is known this is the first occasion of their

doing so since 1944. A photograph of a female at a nest with five young forms the frontispiece of that report, in which ornithology occupies 29 of the 42 pages. Special features include a review of the migratory movements in spring and autumn and lists of birds found dead on the tidemark.

The area covered by the Yarmouth Society is stated to be that within ten miles of the Haven Bridge, so that the Suffolk half of it overlaps that covered by the Lowestoft Society. In this first report, however, nearly all the records are from the Norfolk half, and most of the observations recorded relate to birds. The most interesting occurrences are dealt with in special notes by R. Harrison. As at Lowestoft three pairs of Black Redstarts nested in Yarmouth in 1950, these being the first records for Norfolk. The breeding, or attempted breeding, of Pintail at Breydon in 1949 and 1950 has already been recorded in our pages. The colony of Common, Sandwich and Little Terns on Scroby Sands again had a bad season, nearly all the eggs and chicks being washed away by high tides and storms. Photographs of the nests of Pintail and Black Redstart are included in this report of 27 pages. W.B.A.

Cambridge Bird Club Report, 1950.

This 24th report maintains the high standard of recent years and indicates that members of the club have again been active in the field. The bulk of the report, 16 pages, contains observations on species in systematic order from Cambridgeshire, western Norfolk and southern Lincolnshire (Holland); the Suffolk Breckland, from which numerous records have appeared in the past, being now covered by the Suffolk report. The chief rarity recorded was the Yellowshank at Peterborough sewage farm on May 16th already reported (*antea*, vol. xliii, p. 405). A Dipper seen by a stream in the winter 1949-50 is the first record of the species in Cambridgeshire.

A valuable introductory section of five pages deals with general topics, including an outline of migratory movements as affected by the weather, particularly a great westerly passage of Sky-Larks and other species towards the end of October. The sewage farms at Cambridge and Peterborough were under constant observation and the latter proved the more attractive to Terns in the autumn though less attractive than Cambridge to the majority of waders. A useful account of the bird haunts in the fens and round the Wash is also included. W.B.A.

Huntingdonshire Fauna and Flora Society Annual Report, 1950.

The third annual report of this society contains a section of seven pages on birds, compiled by C. F. Tebbutt from the notes of an increasing number of observers. A Spotted Redshank identified on September 17th provides a new record for the county and a Pied Flycatcher on October 24th is the first recorded for many years. W.B.A.

WALES

Montgomeryshire Field Society: Report and Notes, 1950. (Hon. Sec.: Miss J. MacNair, Lower Garth, Welshpool).

This is a comparatively new report and is particularly welcome as it breaks entirely new ground. At present it can only be described as a slender report, much of its limited space being necessarily devoted to other aspects of Natural History, but at least a beginning has been made and in this issue Mr. W. M. Condry gives suggestions for local faunistic work which would repay study in future years. Whatever the limitations of space we think it unfortunate that in many cases the records do not include localities or even dates. In the case of a cock and hen Golden Oriole this may have been intentional, but there is no means of telling whether they were a pair; but a report of a Red-breasted Goose "seen with two Barnacle Geese among a flock of White-fronts" should surely be accompanied by more data if future workers are to decide whether this was an escape or a truly wild bird. A Great Grey Shrike at Llansantffraid on March 6th is beyond its normal range and is an addition to those previously reported for the winter of 1949-50 (*antea*, vol. xlv, p. 109). The increase in the numbers of Pied Flycatchers is maintained. A report of a Blackbird eating a wasp is of interest in connexion with recent notes in our pages. We

must also mention a story of a family of Wrens who left their nest on a wet day and were helped to return to it in the evening by means of a stepladder. Though the ladder was moved the Wrens climbed it again on the following afternoon. It was then replaced by the nest and used twice before the nest was finally abandoned.

J.D.W.

LETTERS.

VISIBLE MIGRATION IN THE MEDITERRANEAN

To the Editors of BRITISH BIRDS

SIRS,—We are hoping to collate information about visible migration over, and on the shores of, the Mediterranean. Very little has been published on the subject and no doubt a good many unpublished records, especially those made on voyages, are in existence. If any one would be so good as to communicate such records to us, he may rest assured that full acknowledgement would be made in the event of publication. W. B. ALEXANDER AND R. E. MOREAU, Edward Grey Institute, Botanic Garden, Oxford.

THE WAY MIGRATION TAKES PLACE

To the Editors of BRITISH BIRDS

SIRS,—Mr. Hinde's conclusions on the way in which migration takes place, in his "Further Report on the Inland Migration of Waders and Terns" (*antea*, vol. xlv, p. 329) and Dr. R. J. Raines' subsequent letter have interested me considerably. It seems that the old controversy of migration on "Broad fronts" versus "Routes" has now been replaced by one of "Broad fronts" versus "Broad fronts with associated lines of concentration." Mr. Raines favours the latter and in this I would like to support him.

During the spring of 1951 I was stationed at Cuxhaven, on the mouth of the Elbe in north-west Germany, and was able to study the massive migration that took place from mid-February until the end of May. I am still analysing a great number of observations, but in a general account "Spring Migration in North-West Germany—1951" published in *The Sea Swallow* for 1951, I wrote as follows: "From early March, a great migration of other species started, the birds travelling north-westwards on a broad front between Hamburg and the sea. They probably extended much further than this, certainly out to seaward as far as Heligoland. At the same time, the migrants tended to concentrate in certain parts of this broad front . . . hence the old controversy of broad fronts versus narrow fronts for migration."

These concentration lines were (1) towards Heligoland, (2) following the Friesian Islands, (3) following the coastline of the German mainland. As an example of the latter concentration line—on April 1st during one hour's observation on the coast 2,312 migrants flew over, but during the same hour another observer watching from a tower in Cuxhaven, two miles inland along the Estuary, saw only 22 migrants travelling in the same direction, and this type of observation was repeated many times on a similar scale. As regards individual species, the Grey-headed Wagtail (*Motacilla flava thunbergi*) is a good example of a species that concentrates into a narrow front on migration. Large numbers follow the Friesian Islands, while during three days' observations in May, 198 individuals were seen on a stretch of land about a mile long between Cuxhaven and the coast. At the same time only 17 were seen on the Oste marshes, which are ten miles inland along the Elbe. On the Pinnau marshes, a further 20 miles inland on the same estuary, I never saw a single Grey-headed Wagtail during two spring migrations. We have only to remember how seldom this race of Yellow Wagtail occurs in Kent, in comparison with the large number that follow the adjacent coast-line of the Continent, to realise that this is a bird that "concentrates."

JEFFERY G. HARRISON.



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NOTES AND DISPLAY OF THE MAGPIE.

BY

DEREK GOODWIN.

(with text illustrations by R. GILLMOR).

IN July, 1949, I acquired a juvenile female Magpie (*Pica pica*) which was fixated on human beings and when adult regarded me as her mate. This bird's behaviour inspired closer observation of wild Magpies for comparative purposes, but I was unable to do any prolonged watching of individual wild birds. By 1951, a certain amount of rather scrappy data had been gathered, and in the hope of studying the subject more fully three more young Magpies were taken and hand-reared. Unfortunately a series of mishaps put an end to these hopes. The old female was accidentally killed, the tamest of the three juveniles was killed by a cat, and the other two joined forces with a family of wild Magpies that visited the garden for food, and eventually disappeared with them. Since then study has been confined to intermittent observations on wild birds and on three captive birds now in the Regent's Park Zoo, two at least of which are reacting socially to humans.

These notes seem, however, worth publishing to amplify *The Handbook's* remarks on the above subjects. They are in no sense a comprehensive or detailed analysis of the bird's notes and display, but may perhaps prove of value as an outline for anyone contemplating a thorough study of the subject. The difficulties of using letter combinations to convey an idea of the notes of any bird except *Cuculus canorus* are obvious, but in making an attempt I have followed the suggestions on this subject in the preface to *The Handbook*, except that here "ch" at the end of a word or syllable has the same sound as in the Scottish word "loch."

NOTES.

(1) *The Chattering Notes.*

The well-known harsh rattling chatter is primarily an alarm note, but is at times apparently used as an expression of anger or violent protest. As with the alarm note of the Jay (*Garrulus glandarius*), and probably most other birds, it is chiefly given when the impulse to flee is apparently inhibited by curiosity or aggressiveness. A panic-stricken Magpie (such as a wild one caught in a trap) does not chatter but makes its frantic efforts to escape in silence. Tame Magpies that are reacting socially to man often chatter if seized in the hand and a wild bird did so when its mate, with whom it was fighting, held it down on its back. Sometimes

each phrase of chattering is prefaced by two longer notes "Skah ! Skah ! Cha-cha-cha-cha !" In the tame female this always indicated the sudden appearance of some alarming object. In some birds the chattering is higher in pitch and less loud than in others. Two tame birds known to be females had such quieter and higher pitched chattering, but this may have been coincidence.

(2) *The Harsh Double Note.*

A harsh bisyllabic "Shrak-ak !" often repeated at short intervals, but never run together to suggest a chatter, appears to be given when the bird is ill at ease, but has no concrete visible object on which to focus its alarm, for example by a bird that has been disturbed at night, or put into a strange enclosure. Probably given in a more definite context in a natural state.

(3) *The Appeal Note.*

This is based on the hunger-call of the fledged young and has numerous variants. Most typically it is an eager-sounding two-syllabled "Cheeuch !" or three-syllabled "Cheeuch-uch !" which although hard to describe is (in typical form) unlike any other note and will be easily recognisable to anyone who listens much to Magpies. Shorter, lower-pitched, more or less monosyllabic versions of this note are very frequently used.

Apart from its fundamental use as a juvenile call for food this note is used as a greeting between paired birds, by the female when begging her mate for food, and by a tame bird at the appearance of its owner. Probably, like the appeal note of the Jay, it is used whenever any emotional or physical need not involving alarm or anger is felt, and the more constant variants are used in slightly different circumstances, but further information on these points is needed.

(4) *The "Tchurch" Note : (a) Aggressive form.*

A throaty, explosive, almost snorting, "Tchurch !" which is jerked out as head and tail are jerked up and wings slightly lifted (see under "Wing-flirting Display"). This note is often used by tame birds towards human beings, and accompanies apparently aggressive display and often actual attack. I suspect it is correlated with sexual and/or territorial rivalry. It is almost always heard at the ceremonial gatherings, whose implications are, I think, primarily sexual.

(b) *Peaceable form.*

A soft, gentle "Tchurch" is often given by tame birds when "talking" to people for whom their feelings appear to be entirely affectionate or submissive. It is also frequently heard from wild birds that are in company with their mates. The difference between the aggressive and peaceable "Tchurch" notes is similar to that which is conveyed in the one human word "Hallo" when spoken in furious anger and utmost affection.

(5) *The "Tchuk" Note.*

A short, explosive (but not loud) "Tchuk!" with a suggestion of a guttural click in it. Given by tame birds (sometimes) when spoken to, and almost certainly indicative of sexual feeling. Accompanied by a quick downward bow of the head, upward jerk of the tail and the wing-flirting display, the last usually at low intensity. Heard from wild birds at ceremonial gatherings. Probably homologous with the guttural clicking notes of jays (*Garrulus*, *Cyanocitta*, *Aphelocoma*, *Psilorhinus*) and crows (*Corvus* sp.) although bearing only slight audible resemblance. From tame birds only heard from those known or believed on good presumptive evidence to be females, but too few specimens have been studied to deduce anything from this.

(6) *The Nest-call.*

A prolonged, hoarse, "throaty" call, often continued for about half a minute or more without intermission, not harsh or sharp enough to be described as a screech, but loud and with an intense urgent tone. This was often uttered by my tame female, always at the nest-site. If when nesting, she caught sight of me at a distance she would at once fly to the nest-site and give this call. She appeared to utter it with lowered head and somewhat raised tail and to be mandibulating nest-material whilst so doing, but as she never gave it when I was at or near the nest-site with her I never got a clear view of her calling. One of the tame Magpies at the London Zoo (almost certainly a female) who has no apparently suitable nest-site in her aviary, often flies to a high corner and gives this call whilst clinging to the wire, with head usually somewhat lowered, and tugging, pushing, and pecking at the wire whilst calling in a way suggestive of great emotional tension. Twice I have seen her give the wing-flirting display whilst uttering this call. This bird is fixated on people and she flies up to her corner and gives this call (sometimes) when I move away from the front of her aviary after she has spent some time "talking" and displaying to me. Both Mr. John Field and I have heard this note from wild Magpies in the nesting season, but without being able to see what was taking place. The evidence suggests that its function is probably to call the mate to the nest-site and/or to stimulate it to join in nest-building. For this reason I have tentatively named it the "nest-call", but observations on its use between normally paired-birds are necessary before there can be any certainty of its function.

(7) *Screaming.*

A loud, hoarse, screech, suggestive of the alarm-screech of a Jay, but less harsh and cutting. This is often uttered when the bird is handled. Apparently expresses fear, but perhaps not necessarily any great degree of it. Trapped wild Magpies are often silent when handled, and a tame bird may scream loudly and yet the moment it is released show no further signs of fear and not even fly off the hand that held it.

(8) *The Protest Note.*

My tame female would utter a soft protesting "Tsraee," a little quiet note "dying away" in a pathetic manner. She did this if I pushed her away from anything she was meddling with, or otherwise thwarted her. The same note, rather more intense and loud, was given by a juvenile when approached threateningly by an adult.

Other Notes.

A variety of soft, low-pitched notes, with an oddly submissive, conciliatory tone were given by my tame female when she was perched close to my face, particularly in response to my talking to her in an affectionate tone. These notes are frequently used between pairs of wild magpies, particularly when at or near the nest-site. They are certainly expressive of affection—though they may well also have some more definite function. Possibly these sounds are really low intensity versions of the appeal note.

A deep, low, note, suggestive of a person trying to say "halloo" without sounding any consonants, is uttered by most tame Magpies I have seen. It is given with similar, but less intense, posturing to that accompanying the aggressive "tchurch." Owing to its lack of "magpie accent" I at first thought the bird was in fact trying to talk, but am now more inclined to think the note innate.

Mimicry.

As is well known, tame Magpies often imitate the human voice and other sounds. Rather surprisingly they can copy human whistling as exactly as a Jay. But I have not personally seen any Magpie that had anything like the repertoire of the average Jay, Starling (*Sturnus vulgaris*) or Reed-Warbler (*Acrocephalus scirpaceus*). I have never heard any recognisable copied note from a wild Magpie although among the medley of low-pitched notes and phrases which juvenile and first autumn birds at least will sit and "warble" for half an hour at a time, I have heard notes that I could not identify as minor variants of any of the innate Magpie-notes known to me and which may well have been imitations of other birds, or attempts thereat.

It is of course hardly necessary to say that with the Magpie, as with other birds, the notes uttered being audible expressions of emotional states, it often happens that intermediate utterances are given as one emotion is superseded by another. The same is true of display and posturing.

DISPLAY.

As is well known, the Magpie, under most conditions of social and sexual excitement fluffs out its plumage in such a way as to increase the amount of white visible (Stubbs 1910). It also usually holds its wings with the secondaries slightly spread, and somewhat flattened in a dorsal plane, so that they present, to one looking down on the bird, two rectangles of brilliant colour. A frightened Magpie shows relatively little visible white plumage.

(I) *Wing-flirting.*

The bird, usually with head somewhat lowered, suddenly lifts its folded wings so that the "squared" secondaries are, together with the rest of the wing, raised forward at an angle of about 30 to 40 degrees above the back. As the wings are lifted they are fluttered, and may be slightly opened. This wing-movement is usually accompanied by a forward bow of the head and upward movement of the tail, but these may be hardly perceptible. The 'tchuk' note, the peaceable "tchurch," or some version of the appeal note is generally uttered at the moment of displaying. The head feathers are more or less erected, this appearing in *Pica* and *Cyanopica* to be a sign of peaceable, if sexual, intention. In very low intensity versions of this display all the above movements may be little more than "suggested" and of course all intermediate forms occur.

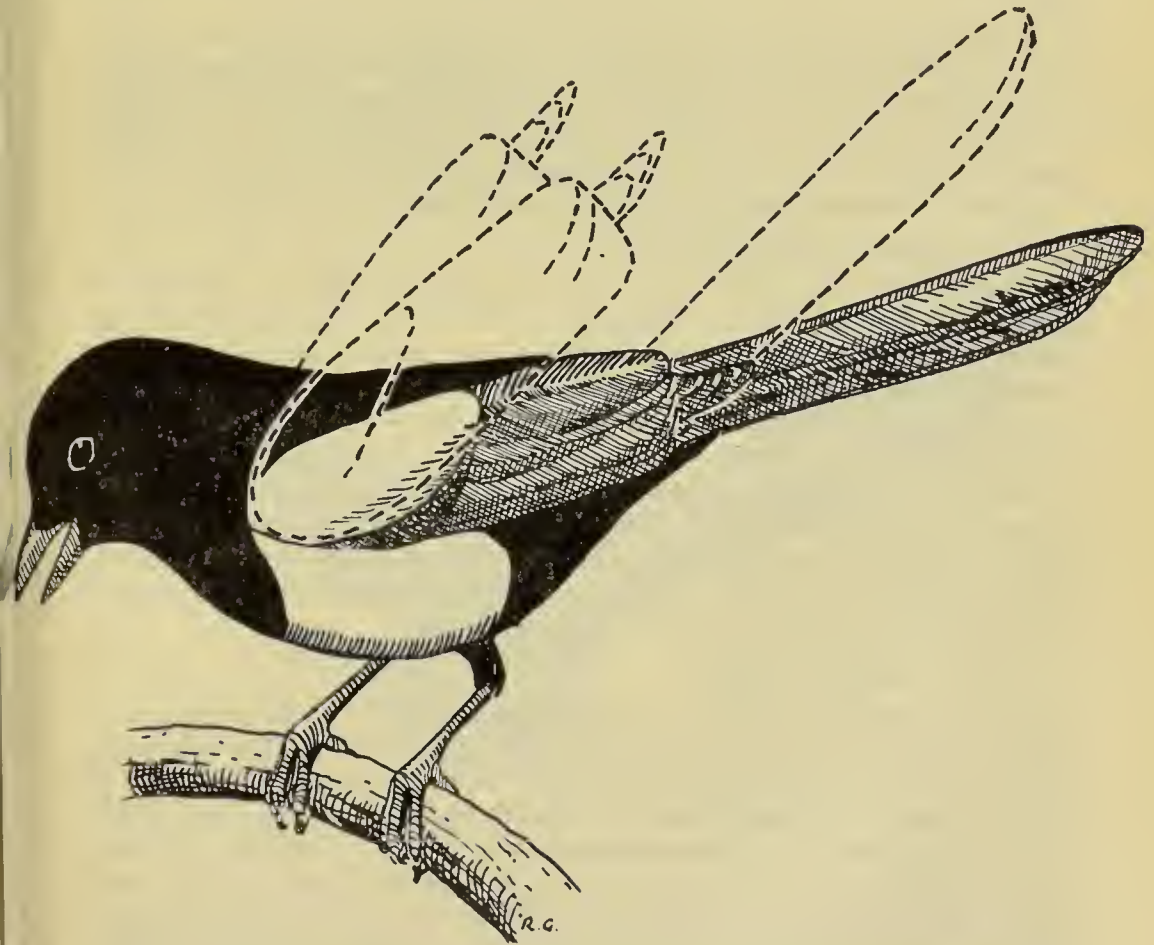


FIG. 1.—"WING-FLIRTING." THE USUALLY LESS CONSPICUOUS HEAD AND BODY MOVEMENT HAS NOT BEEN INDICATED.

This display is used by birds of either sex towards their mates. It is often given, apparently spontaneously, when the two are foraging near each other, but more especially by a bird perched or foraging alone when its mate rejoins it or appears in sight. It is also given, commonly at very full intensity, by paired (or pairing?) birds at the "ceremonial gatherings" as they perch close to one another in couples. At one such gathering near Staines on January 30th when all but four of the original 14 birds had dispersed, the male (?) of one pair furiously attacked and drove the other pair from the top of a hawthorn bush. It then gave very intense wing-flirting display and its mate at once joined it and they stood near each other giving this display. The male then climbed down through the branches until it was in a very typical site for a nest, where it again gave the wing-flirting display at great intensity, on which the female (?) at once climbed down to it and they displayed together several times before climbing back to the bush-top. This apparent site-selection was repeated several times in the next half hour.

My tame hen Magpie usually greeted me with this display. After a pair of wild Magpies had fought one another (through exasperation at being unable to get at a captive Magpie they wished to attack) and broken apart, one of them approached the other and gave this display, after which they stood for some time with their heads close together, blinking and uttering the soft affectionate notes.

(2) *Aggressive Wing-flirting.*

Differs from the peaceable form in that the wing movement is relatively slight, with no fluttering, the tail is jerked upward far more vigorously, and the feathers on the head, especially on the crown, are depressed. As the tail is jerked up there is an accompanying *upward* movement of head and body and the aggressive "Tchurch" is uttered. Occurs often at ceremonial gatherings. Is used towards me by a tame male Magpie, who attacks me fiercely if given any opportunity. Also used towards some strangers by my tame hen Magpie, apparently in threat, although she never actually attacked them. May be a sexual display that only turns to hostility if its object gives an inappropriate response.

(3) *The Tilting Display.*

Bird approaches with its secondaries displayed as described. It tilts its body, slightly raises the further wing (without unfolding it) and switches its tail towards the object it is displaying to so that it forms an angle of about 130 degrees with the body. The bird holds its head high and utters low, monosyllabic notes. This display was used towards me by my tame female, but as she used it even more intensely towards other people it may be in part an intimidatory display. Lorenz (1931) describes this, or a closely similar display, as the courting display of the male, so it is possible that its use by my tame female was induced through lack of a suitable sex partner,

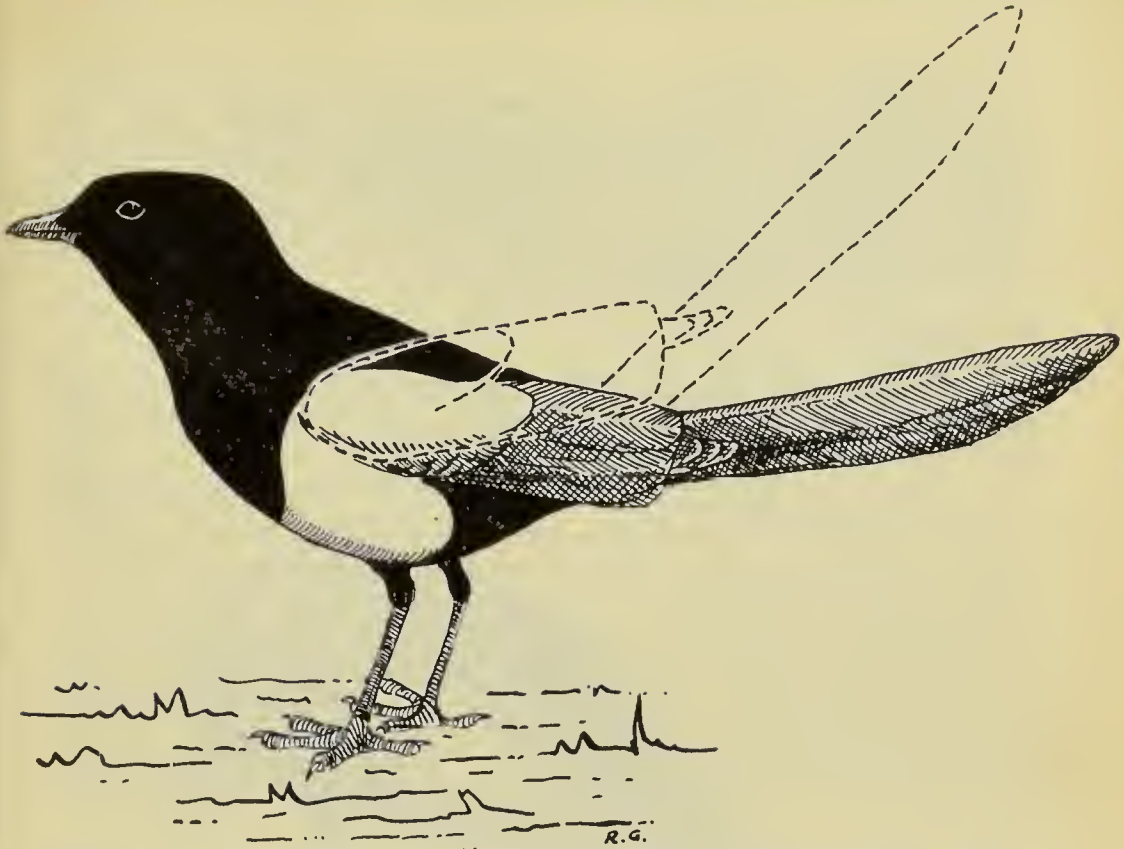


FIG. 2.—AGGRESSIVE “WING-FLIRTING.” THE UPWARD HEAD AND BODY MOVEMENT—SEE TEXT—HAS NOT BEEN INDICATED.



FIG. 3.—TILTING DISPLAY, AS SEEN FROM DIRECTLY ABOVE. (FROM A PHOTOGRAPH).

just as unpaired female pigeons (*Columba* and *Streptopelia*) often show male behaviour. I am uncertain whether Stubbs's (1910) description of a display in which “every few seconds the head feathers are rapidly erected and depressed, and the tail uplifted and opened and closed like a fan” refers to this or some other display.

(4) *Aggressive Display.*

Very similar to (3) above, but the feathers on mantle are lifted and as the tail is switched sideways the lateral feathers on the near side are spread. Used when threatening or attacking another Magpie (sometimes). The bird approaches with head lowered and held forward—in readiness to lunge in and then dodge away—and has an indescribably malignant appearance.

(5) *Begging.*

The wings are lifted high at the shoulders and fluttered, the bird standing high on its perch (in the more intense versions) and giving the “cheeuch” call loudly.

The juvenile’s appeal for food, also used by female begging food from male and by tame birds—some of which, at any rate, seem likely to have been males—towards their owner when eager for food. Probably used in other circumstances where some appropriate action on the part of the mate is desired (just as a male Jay may beg in juvenile fashion to entice his mate to the nest-site), but I have so far seen no instances that could not have been interpreted as desire for feeding. In low intensity versions begging may be confused with the wing-flirting display, and it is possible, though I think unlikely, that they are versions of the same behaviour-pattern.



FIG. 4.—BEGGING—MOST INTENSE VERSION.

Blinking.

A rapid and frequent drawing of the nictitating membrane over the eye is common when the bird is in a state of socially-induced excitement, whether sexual or aggressive. The tame female did this particularly when affectionately "talking" to me, and would often finish by drooping her head forward with the short velvety head-feathers erected, and drawing the membrane across rather slowly, holding it over the eye for a second or two so that one could plainly see the brilliant orange patch at its upper corner that merged gradually into the greyish-white of the rest of the membrane. Even to the human eye a couple of feet away this sudden show of brilliant colour was startling.



FIG. 5.—TAME FEMALE DROOPING HEAD AND DISPLAYING NICTITATING MEMBRANE. (FROM A PHOTOGRAPH).

Bowing.

The quick downward bow, accompanied by an upward jerk of the tail, is perhaps primarily a balancing movement, but, like the homologous body-and tail-jerking movements of other passerines, it is indulged in whenever the bird is at all excited.

Hammering, Billing of material, etc.

Hard hammer blows on the perch with the closed bill are used in moments of nervous tension, particularly when the drives to escape or attack are inhibited. It is of course, primarily a feeding movement, and is used in this connexion to open acorns, nuts, etc. Pecking at twigs and other objects, the holding and "fingering" of such things as bark, twigs, etc. in the bill are common in moments of sexual or affectionate excitement. Whether these are derived from feeding or nest-building movements, or both, I would not like to express any opinion.

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STUBBS, F. J. (1910). "Ceremonial gatherings of the Magpie." *Brit. Birds*, iii : 334-336.

LITTLE AUKS IN BRITAIN, 1948 TO 1951.

COMPILED BY

D. E. SERGEANT.

INTRODUCTION.

IN the two winters 1948-9 and 1949-50 an unusual number of Little Auks (*Alle alle*) visited the British Isles. Most noteworthy was a "wreck" (i.e., a widespread destruction of the species on land) in mid-February, 1950, probably the most extensive in the country since that of Jan.-Feb., 1912. This paper reports the recent visitations, particularly the wreck (of which no complete account has been published). From the data collected the status of the Little Auk as a winter visitor to British waters is revised.

Many individual records have been published already in county and local reports, magazines and newspapers ; where possible these references are acknowledged. Other records were sent in to the Editors of *British Birds* and to the writer, some spontaneously and others as a result of appeals for information published in this magazine and in the Bulletins of the British Trust for Ornithology. Thanks are extended to all who participated ; it is, as usual, an invidious task to select the few from the many, but I am indebted particularly to Dr. Bruce Campbell, to Major R. F. Rutledge for a report on Ireland as a whole, to Mr. A. G. Parsons who made

strenuous enquiries in the south-western peninsula; and to Mr. A. E. Vine who lent his experience in interpreting meteorological maps.

NORMAL STATUS OF THE LITTLE AUK IN BRITISH WATERS.

The Handbook records the Little Auk as "an irregular winter visitor most frequent north and east Scotland and eastern England, but occurs all coasts". It should, however, be stressed that Little Auks occur every winter, only the numbers being irregular. The waters from the Shetlands southward down the North Sea represent the southernmost part of the regular wintering range on the European coast, and the numbers at sea are probably always small when compared with those further to the north, as in the latitude of the Færoes, Iceland, and Norway, north from the waters round Stavanger. (See Salomonsen 1944, for example).

Thus, for the Shetlands, G. T. Kay states (*in litt.*) "Some winters we have them in large numbers and less in others. For instance, in the open sea area between the islands of Whalsay, Out Skerries, Fetlar and Yell, there may be seen a few hundreds some winters and perhaps two or three thousands in others. These birds keep to the open tidal waters where the feed is plentiful, and rarely come into sheltered harbours. The few that come into Lerwick harbour are almost invariably in a dying condition." For the Orkneys, G. Arthur writes "I receive a few Little Auks every winter during storms." For the east coast of Scotland, the most complete statement still comes from Gray (1871) who wrote that Little Auks were there regularly every winter, and were well-known to the fishermen about 20-30 miles off the Fife coast. Gray had himself shot birds here in several winters. The frequent reports at the present time from the Isle of May doubtless denote a similar distribution.

As more intensive watching develops in winter along the east coasts of England and Scotland, more frequent reports will probably come in (*cf.* those from Cley in Norfolk, cited on p.124). However, it must be borne in mind that the numbers seen from the coast will not represent the true picture of abundance, since Little Auks in the North Sea do not habitually come close inshore. We have no good account of the distribution of Little Auks in winter in the North Sea nor of their movements. However, that their numbers may sometimes be great can be deduced from reports from watchers on the north-east coasts. In November, 1948, a large-scale passage northwards was seen along the Northumberland and Durham shore, one watcher counting 3,500 birds in 8 hours. (*Naturalist*, 830, p.130, 1949). Mr. G. W. Temperley (*in litt.*) has made clear the significance of this movement "... We frequently witness such northerly passages, no doubt caused by the N.E. gale sweeping the birds, engaged in fishing in the North Sea, up against the coast when

they can only escape being driven inland by following the shore in a N.N.Westerly direction, only a few degrees off the wind." Should the gales be strong and the birds weakened, a wreck will result—a typical wreck from the north-east. An interesting point arises from these observations: the birds do not travel before the wind, that is, they do not (apparently) travel down through the Straits of Dover into the Channel. However, there is much scope for observations made at sea from all round the British Isles. There are very few records from the coasts of the west of Scotland, and observers on the usual Atlantic steamer routes have failed to report Little Auks in the "western approaches" (see, for instance, Rankin and Duffey, 1948). Yet there are frequent reports of Little Auks from the west of Ireland and from Scilly. One can only surmise that the species is thinly scattered in these waters, and has a distribution fairly close inshore. These generalizations may be made clearer from the accounts of the two winter visitations.

THE WINTER OF 1948-49.

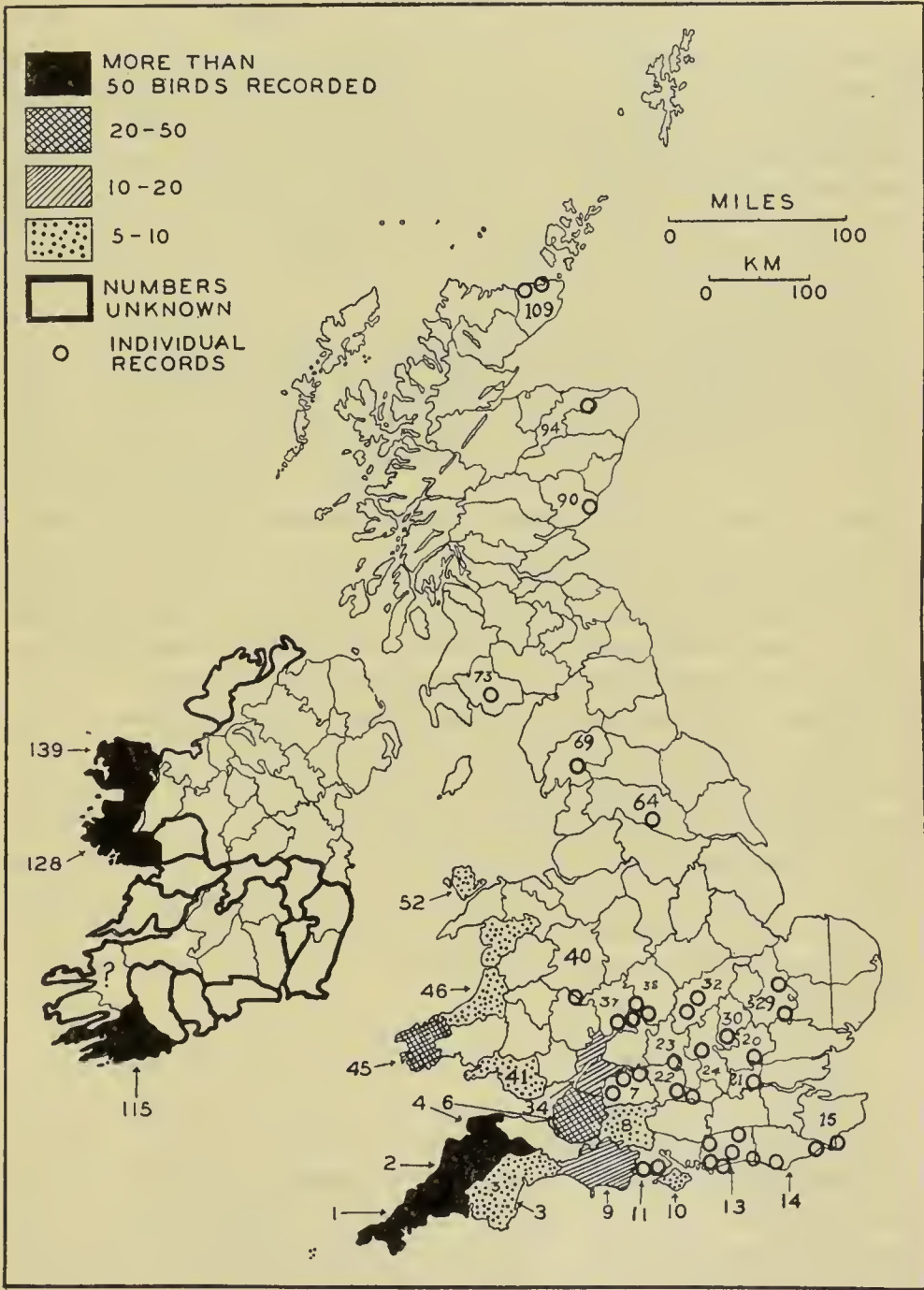
DETAILS of Little Auks recorded are set out in Appendix 1, p.130. Most noteworthy was the large passage of birds seen from the north-east coast of England, and the probable significance of this has been mentioned. The number of birds stranded or blown inland was comparatively small, so that there was no real "wreck"; however, the pattern of the visitation was essentially the same as that of the great wreck of Jan-Feb., 1912. In both cases, strong north-easterly gales forced the birds to the shore; in the year of the wreck, however, the weather was severe and the birds probably emaciated, so that they were destroyed. (See Witherby, 1912).

On the north-west coasts the numbers were unusual but probably smaller. There are the records of numbers from north-west Scotland, and single but indicative records from Galloway and from the western Channel. One may surmise that the initial wave of birds which reached the Shetlands and Sutherland coast was deflected into two streams, the larger entering the North Sea and the smaller passing down the west coast and gradually tailing out. It may be said that the history of past visitations to the west coast is not at all clear, owing to the paucity of records from the islands of Scotland and from western Ireland.

THE WINTER OF 1949-50.

THIS winter saw a great wreck from an unusual quarter—the south-west. However, this did not come till mid-February, and it was prefaced by an influx of Little Auks all round the coasts, in relatively small numbers. (See Appendix 2). We may summarize this as follows: an influx in Orkney was recorded in November and the first half of December. At the same time, isolated birds cropped up in the North Sea (Northumberland and Norfolk) and the Channel (Hants. and Sussex). It is noteworthy that almost all

these southerly birds were reported as healthy. The Ringwood (Hants.) bird was released at sea and flew off actively. On the other hand, birds found inland during the February wreck were



DISTRIBUTION OF LITTLE AUKS AFTER THE WRECK OF FEBRUARY, 1950. RECORDS FROM FEBRUARY 9TH AND LATER ARE INCLUDED. SHADING SHOWS DENSITY OF RECORDED BIRDS BY VICE-COUNTIES. NUMBERS REFER TO VICE-COUNTIES, NOT TO BIRDS.

invariably emaciated and rarely survived longer than a day. Some significance is attached to this difference in the condition of wrecked birds and those that occur at other times.

THE WRECK OF FEBRUARY, 1950.

DETAILS of the wreck are given in Appendix 3, p.131, and its extent shown on the accompanying map. (p.125). The wreck took place between February 8th and about the 17th, during a period of west-south-westerly gales and rain. On the 8th there were reports from Somerset, on the 9th from Co. Cork, Berks. and Hants.; the largest number of birds was blown inland on the 10th, and the destruction was widespread on the 10th and 11th, followed by a lull and a second wave on the 16th and 17th.

The general picture built up from the records is as follows: A large body of Little Auks was wintering at the time in the "Celtic Sea" area, off the south-west of Ireland. When the gales began, these birds were driven down upon the coasts, and many went ashore in Cork and Cornwall. Others pushed up the Irish Sea, the Channel and the Bristol Channel; indeed, the Bristol Channel appears to have acted as a trap in the manner of a gigantic duck-decoy, for a glance at the map shows a concentration of birds at its head. One may visualize the birds staying in the water until nearly driven upon land, when they fly up, to be caught by the wind in their weakened state and whirled inland. Thus stragglers reached eastwards as far as Cambridgeshire and the West Riding of Yorkshire. There is a graphic description of a party coming down on the wet surface of a concrete road near Bristol on the 11th, evidently mistaking its surface for that of the sea. A similar miscalculation has been reported before (Murphy and Vogt, 1933).

There are few certain records of fresh destruction after about February 20th, except from the north-east of Scotland. However, it is difficult to guess the age of dead birds, reported as fresh, but kept in natural cold-storage for much of the time between death and finding.

EXTENT OF THE WRECK OUTSIDE THE BRITISH ISLES.

IN spite of a considerable search, no data have come to hand from other European countries. No observers could be found to give information from Brittany and Normandy, where birds must have occurred, as in the Channel Islands. In south-west Norway there were about the usual numbers of Little Auks about the outer parts of the fjords (Dr. H. Holgersen), and there was no wreck on the Danish coast (Dr. F. Salomonsen). No information could be gleaned from Portugal (*per* R. Dunt), so we have no idea if the wreck extended at all southward of the Channel.

METEOROLOGICAL CONDITIONS.

THERE were severe, but not extraordinary, gales at the time of the wreck. The monthly summary of the Meteorological Office's weather reports for February reads: "A series of depressions moved over or close to the British Isles, giving substantial squalls of rain, with flooding in many areas. Gales occurred at times." This is the familiar Atlantic weather. In more detail, the daily charts show deep troughs of low pressure moving across regularly from the Grand Banks area to the southern half of the country, giving gales from the west-south-west. These gales started about the 3rd of the month, and the most severe was that of the 10th at Bournemouth (K. B. Rooke), with 50 m.p.h. gusts.

There was then a lull from the 12th to the 16th, and a last depression-cum-gale on the 16th and 17th, after which things became quieter. Thus the time and extent of the wreck coincided well with the gales, except for the initial time-lag before the birds started to reach south-western shores. This suggests that they were initially some distance offshore, and took some days to become drifted in to land.

THE WINTER OF 1950-1951.

THERE were a few records from the Irish Sea and English Channel, as follows :

1, Shanklin, Isle of Wight, oiled, Jan. 18th, 1951.

1 washed ashore, L'Etac, Jersey, Sept. 18th, 1950 (K. Lecocq).

1, exhausted, Aberystwyth, Jan. 16th, 1951 (D. G. Sansbury).

Little Auks were evidently widespread during the winter, but from the few records it appears that they were thinly scattered. In this winter a notable migration and wreck occurred on the New England Coast (Dorothy E. Snyder, *Massachusetts Audubon Magazine*, Jan., 1951).

POSSIBLE CAUSES OF LITTLE AUK WRECKS.

WE must conclude, it seems to the writer, that there was an unusually dense body of Little Auks off the south-west of Ireland in February, 1950, which was finally destroyed by the gales only after an initial catastrophe which weakened them. Wrecked birds are always emaciated, being considerably underweight and with their body-fat lost ; it is impossible to say whether they were emaciated and weakened before being blown ashore, or whether the great loss of energy during the flight produces this appearance. However, it is noteworthy that stray Little Auks brought to the coasts or inland at other times than the wrecks are rarely so thin, and usually appear more active. This suggests that the birds involved in a wreck are in some way weakened at sea, presumably by starvation.

Commonsense considerations make it unlikely that seabirds, so well fitted as the Little Auk to spend the entire winter on the high seas, should be unable to ride out gales even of severe strength.

Large wintering concentrations of Little Auks ride out each winter on the "Tail" of the Grand Bank, and off southern Greenland, areas with stormy reputations. The behaviour of Little Auks during a gale is described by Rankin and Duffey (1948, p.39), from which it is clear that the approach of a ship disturbs the birds more than high winds and seas.

A suggestion here put forward has been made previously by Murphy and Vogt (1933). It is that Little Auks are weakened first by starvation, due to a failure of their planktonic food-supply. Their food, in open seas away from the ice-floes, consists largely of the planktonic crustaceans of northern seas, especially the large copepod *Calanus finmarchicus* and pelagic amphipods, which appear to be picked out from the surface waters. (A Little Auk has the same aid to "hawking" as a Swallow (*Hirundo rustica*) or Nightjar (*Caprimulgus europæus*), namely a rim of stiff hairs on either side of the mouth). These crustaceans are widespread in the surface waters of the North Atlantic. One must remember, however, that a diving bird can feed only in the top few feet of water, as deep as it can dive—in contrast to a whale or herring (which takes roughly the same food). Moreover, such a small species will have a high metabolism, in spite of its insulation of fat and close feathering, and so will need to feed frequently. Thus if the plankton is scarce, or migrates down to depths which the birds are unable to reach, they must either starve or move quickly to richer waters.

Now, not enough is known about the density of this plankton in surface waters in winter and during stormy weather, since these are the most difficult times for oceanographical research ships to operate their nets.

However, it is known that in summer, the density increases northward from the tropics to the Arctic, thus supporting much richer stocks of fish, whales and plankton—and fish-eating birds. (See Jespersen, 1930). And the Little Auks mostly remain in high northern seas during winter, which suggests that they continue to find good feeding there and not further south. Another suggestive line of evidence is that wrecks do not occur in the more northern wintering areas, e.g., the Norwegian coasts and Newfoundland, but only at the southern edge as in Great Britain and New England. We may thus attribute this wreck of 1950, and others, tentatively to a failure of the food supply of a large body of Little Auks well south of their normal range, in warm ocean waters to which they do not spread in most years.

Should this be the true story, it still does not tell us what brings the Little Auks south at all, to seas which we have assumed to be less suitable feeding grounds. There are in some years movements far to the south, especially well-recorded on the American side. Thus a great wreck took place down the eastern American seaboard as far south as Florida and Cuba in 1932 (Murphy and Vogt, 1933), and in 1936 a flight took place as far as Florida under good weather conditions (Sprunt, 1938). Even in the second flight, few of the birds were seen returning north. On the European side birds have been recorded from the Azores (specimen in Natural History Museum), and from Portugal and the western Mediterranean (Witherby, 1941).

These irruptions remind one of the movements of the lemming, which, after years of high population and consequent shortage of food, irrupts southward, usually disastrously. It may be that the Little Auk's southward flights are also caused by a food shortage in its normal wintering grounds on one side of the Atlantic or the other. But of this we have no evidence as yet. It is worth mentioning here, that another auk, Brünnich's Guillemot (*Uria lomvia*) experiences southward irruptions, as from the Hudson Bay south into the Great Lakes region, and from the White Sea into Finland (Salomonson, 1944). It is hoped that further observations at sea round the British Isles, and co-operation between ornithologists and marine biologists studying the planktonic animals of the surface waters, may give us a clearer understanding of this mystery—the mass suicide of the Little Auk.

SUMMARY.

1. Unusual numbers of Little Auks were present in British waters during the winters, 1948-9, and 1949-50
2. In 1948-9, Little Auks were present in large numbers around the Shetlands and northern Scotland, and down the North Sea, and in smaller numbers off north-western Ireland. North-easterly gales drove them close to the east coast, but did not cause any large-scale destruction. The pattern of this movement is regarded as similar to that of previous destructions under the same weather conditions, as in Jan.-Feb., 1912.
3. In 1949-50, Little Auks were probably scattered thinly all round British coasts. In February, 1950, a large body, coming from the Celtic Sea area some distance offshore, was wrecked in the south-west of Ireland and Great Britain and at least as far as northern France. Birds were blown as much as 250 miles inland.
4. A wreck such as this is attributed to the influence of prolonged gales acting on birds already weakened. It is tentatively suggested that such birds are south of their normal range, in relatively warm waters poor in their planktonic food animals. Possible reasons for the periodic southward movements are discussed.

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APPENDIX I.—RECORDS OF LITTLE AUKS IN THE WINTER OF 1948-9.

SHETLAND.—Large numbers off Sumburgh Head, the southernmost point, December, 1948. Many gull-eaten corpses later picked up on Fair Isle. (K. Williamson, *Fair Isle B.O. Report* for 1948).

NORTH SCOTLAND.—Records of dead birds from Inchkinloch, Loch Loyal, Jan. 28th, 1949; Strathmore, Ben Hope, 28th; near Tongue, about same time—all Sutherland. (Dr. I. Pennie, *in litt.*).

EAST SCOTLAND.—1 Feb. 24th; 1, March 4th; 2, March 23rd at Isle of May. (H. F. D. Elder, *Scot. Nat.*, 62: 105). One dead at Kinloch Rannoch, Perth., Feb. 5th. (P. A. Clancey, *Scot. Nat.*, 61: 128).

NORTHUMBERLAND AND DURHAM.—Oct. 28th, 4 at Whitburn; Nov. 7th, 6 seen in flight, Druridge Bay, 3,500 counted off Whitburn; dead birds Nov. 17th, Marley Hill (14 miles inland), Nov. 20th, Cross Hill Farm, Blagdon Estate. (*Naturalist*, 830: 130, compiled by G. W. Temperley).

YORKSHIRE.—One off Teesmouth, Nov. 6th; parties of up to 30 flying north near Filey Brig all morning, Nov. 7th, and on the same day individuals at Swillington Ing, Blaxton and Southowram; 3 flying past Scarborough, Nov. 8th. Stranded birds found at Baildon and Haworth, Nov. 8th, Otley Chevin, Nov. 9th, near Penistone and Hull, Nov. 10th, and near Halifax, Nov. 11th. (*Y.N.U., Committee for Ornithology Report*, 1948, p.74).

LINCS.—Passage along coast in 2nd week Nov.; some picked up, Nov. 11th between the Humber and Boston. (*Lincs. Naturalists' Union, Transactions*, xii: 125).

STAFFS.—One caught alive, Clayton, Nov. 7th. (*North Staffs. Field Club, Transactions and Annual Report*, 73).

WEST COAST: IRELAND.—"The winter of 1948-9, one of violent storms, caused a wreck which was widespread. Specimens were obtained in many widely separated localities. Little Auks were adjacent to Tory Island off Donegal through that winter and up to about January 20th." (*Irish Naturalists' Journal*, 10: 55 and R. F. Ruttledge *in litt.*).

SCOTLAND.—Remains of one on Rockcliffe Marsh, Kirkcudbright, Jan. 20th. (J. S. Douglas and N. A. Redfern).

ENGLISH CHANNEL.—One, flew on board a naval ship, Nov. 25th., position 49° 32' N., 3° 40' W. (*R.N. Bird-watching Society's Report, Sea Swallow*, 1948-9).

APPENDIX 2.—THE WINTER OF 1949-50.

ORKNEY.—An influx in unusual numbers in November and the first half December. (G. Arthur, *in litt.*).

NORTH SEA: NORTHUMBERLAND.—One, Whitley Bay, Dec. 11th (*Naturalist*, 834; 124).

YORKS.—1 nr. Gorple, Nov. 8th; 5 in Filey Bay Nov. 15th, and 5 stranded, 20th; several reported Spurn Head, Nov. 23rd. One dead Grosmont, Nov. 16th. (*Report of Committee of Ornithology, Yorkshire Naturalists' Union*, 1949).

NORFOLK.—Cley Beach, Sept. 7th, Nov. 15th and 2 Dec. 10th, 11th, 15th. (*Norfolk and Norwich Naturalists' Trust Report for 1949*).

CHANNEL: KENT.—Dungeness, Nov. 20th (*Hastings and East Sussex Naturalist*, 7; 5).

HANTS.—One Ringwood, Nov. 16th (D. G. Lowndes and Miss V. Goodwin), and one, Hurst Castle shingle spit, Nov. 27th. The second record may have been of the same bird, which had been caught and released near here.

APPENDIX 3.—THE WRECK OF FEBRUARY, 1950: DETAILED RECORDS OF LITTLE AUKS BY VICE-COUNTIES.

The number of the vice-county is placed in brackets after the name to facilitate reference to the map.

CHANNEL ISLANDS: JERSEY.—Altogether 8 birds washed ashore at L'Etac, N.W. coast, Feb. 11th. (K. Lecocq).

GUERNSEY.—2. One exhausted, Perelle, P.O., 11th; one alive Kings Mills, Castel, 11th. (E. Enevolsen and C. Carey).

SCILLIES (1).—"Some about in January as usual" (Major Dorrien-Smith); nothing unusual reported from other observers in Feb. (A. G. Parsons).

CORNWALL (2).—Total: Order of hundreds. Recorded as follows:—

North Coast.—4, Holywell Bay, 12th (G. L.-B.); 1, Hayle, 13th (A. G. Parsons); 1, Tregorden, 13th (T. J. Willcocks); 1, Trevone, dead, 27th (W. S. Watts); many blown inland, Bude, 11th (Mrs. F. E. Carter, R. B. Treleaven).

South Coast.—1 off Penzance harbour, 16th (J. E. Beckerlegge); 6 dead, Praa Sands, 17th (H. B. Sergeant); remains of *ca.* 40, sands between Loe Bar and Poldhu Cove, March (A. G. Parsons); 1, Mawgan-in-Meneage, Helford River, Feb. 13th.

SOUTH DEVON (3).—Total: 7. 2, Newton Ferrers, 11th (O. D. Hunt); 1 nr. Kingsbridge, 11th (G. Holt); 1, Buckfast, 15th (B.M.C.); 1, Crediton, 13th; 1, Ottery St. Mary, dead, 15th (Dr. R. R. Traill); 1, St. Giles-in-the-Wood, 14th (B. G. Lampard-Vachell); 1, locality unknown, sent to Natural History Museum, 13th (Miss R. M. Caley). (All records *per* F. R. Smith).

NORTH DEVON (4).—15 recorded. 1, Barnstaple, 11th (H. S. Joyce); 14, Braunton, Georgeham and Saunton, 10th. (Dr. F. R. E. Wright).

SOMERSET (5 and 6).—Total recorded: *ca.* 20. 1, Woodspring Priory, nr. Weston-super-Mare, 11th (W. L. Roseveare); 1, nr. Weston, 8th (Miss L. Garrod); 1, Nyland Bridge, Cheddar, dead, 12th; 1 nr. Blagdon Reservoir, freshly dead, 11th (Bernard King, H. H. Davis); 1, Tickenham, nr. Clevedon, very dead, March 11th (H. H. Davis); 16 exhausted or dead within 5 mile radius, Burnham on Sea, Feb. 9th-12th (E. G. Holt).

WILTS. (7 and 8).—8 recorded. One Britford, found dead, Feb. 13th (W. A. Chaplin), one Wilton, 11th, released later in Christchurch Harbour (Mrs. Newton Dunn); one, Broadchalk, near Salisbury, 11th (T. B. W. Jeans, *Field*, March 11th, 1950); one Pitton, nr. Salisbury, morning 13th, ringed and released at Bournemouth (R. Whitlock, *Field*, March 18th, 1950); one Sutton Verney, Warminster, undated (C. E. Riches, *Times*, March 9th, 1950); one Little Avebury, dead, Feb. 11th (Miss D. Hiskins); one Burbage, Feb. 12th (T. McGahey, reported in *Wiltshire Gazette*); one Biddestone, nr. Chippenham, Feb. 10th, seen to drop into a puddle, died following day (C. Rice). (All *per* Mrs. E. Barnes).

DORSET (9).—*ca.* 10 recorded. 1, Tinkleton, 11th and another in area (F. M. Pilkington); 1, Cerne Abbas, 11th (Lady Mary Eastman); 1, Warmwell, 12th, (*per* Mrs. M. S. Hamilton); 1, Rampisham, dead, 13th (W. C. Sanson *per* R. F.-D.); several Langton Herring on the Chesil, mid.-Feb.; and 1 Friar Waddon, (*per* H. R. A. Cornish); 1, Motcombe, mid.-Feb. (R. N. Winnall); 1, Shaftesbury area, (*Dorset Daily Echo*, Feb. 17th); 1, Bridport Golf Course, very dead, March 8th (*per* R. F.-D.); remains Chesil Beach near Bexington, April (H.R.A.C.). (All *per* K. B. Rooke).

ISLE OF WIGHT (10).—1, Boscombe, Carisbrooke, dead, 16th (*The Times*, 28/2/50); 3 *in toto*, central Isle of Wight (E. W. White).

HANTS (mainland) (11 and 12).—1, Barton-on-Sea, Feb., flying strongly (Mr. Thomas). (All Hants records *per* E. Cohen. Total 4).

SUSSEX (13 and 14).—Total recorded: 7. 1, Brighton, alive, 9th (Miss K. M. Bayne); 1, Easebourne, nr. Midhurst, killed on telegraph wire, 11th, (Miss M. R. Morley); 1, Horsham, alive and healthy, 12th (D. L. Dunkin); 1, West Dean, nr. Chichester, 12th, released 10 days later at Pagham (K. O. Murch); decayed body Cuckmere Haven, March 11th (D. D. Harber); 1 dead, Pett Level, April 14th (F. M. Firth); one, Sidlesham, nr. Chichester, alive 12th, died 13th (Miss J. Stacey).

HERTS. (20).—1 recorded, between Gaddesden Row and Redbourn, adult alive, 10th (*Field*, April 29th, 1950).

MIDDLESEX (21).—One, King George VI Res., Staines, found dead, unknown date, Feb. (G. Stewart *per* C. B. Ashby).

BERKS. (22).—3 recorded: 1, Curridge, 1, Horris Hill, both near Newbury, exhausted, 9th (L. R. Lewis); 1, Radley nr. Abingdon, exhausted, 12th. (R. van Oss).

BUCKS. (24).—1 recorded, loc. unknown, 17th, sent to Natural History Museum (J. J. Dibley, *per* M. Banks).

CAMBS. (29).—2 recorded. 1, Litlington, 12th (H. A. Course); 1, Shippea Hill, nr. Littleport, 12th (A. E. Vine).

BEDS. (30).—1 recorded, Luton-Markyate road, dying, 11th (P.S.B., *Bedfordshire Naturalist*, 1950, p. 45).

NORTHANTS (32).—2 recorded. 1 loc. unknown, received Leicester Museum, 15th (A. E. Williams); 1 loc. unknown, given to R. E. Burton, 17th.

GLOUCESTER (33 and 34).—A flock of 12, Bristol, 11th (F. Wilcock, *Field*, April 15th, 1950); one, Stroud, undated, probably during main wreck (*per* A. J. Harthan).

WORCESTER (37).—3 recorded and others reported. 1, Tenbury Wells, exhausted, 12th (*Tenbury Wells Advertiser*, Feb. 24th, *per* E. G. M. Goodwin); 1, Hipton Hill, nr. Evesham, 11th; 1, Kcmerton, between Tewkesbury and Evesham, alive 13th and numbers reported from Bredon area (*Evesham Journal*, 17/2/50).

WARWICK (38).—2 recorded, 1, Tredington, exhausted, 12th (E. A. Simms); 1, Weethley, nr. Alcester, 11th.

GLAMORGAN (41).—*ca.* 8 recorded. 1, Merthyr Mawr, alive, 10th (sent to Nat. Mus. Wales by C. J. S. Nicholl), and 1 same loc., 12th; 1, Newton, alive, 10th; 1, Southerndown, dead, 12th (sent to Nat. Mus. Wales by G. B. Dobbins); 1, alive, Cardiff, 11th; 1, alive, Cadoxton, Neath, 13th (sent to Nat. Mus. Wales by D. J. Hopkin). (Mostly *per* Colin Matheson).

PEMBROKE (45).—1 mainland record and several, islands. 1, Haverfordwest—Dale road, alive 13th (T. Davies, *per* J. H. Barrett); remains of at least 13, Skokholm Neck, early April (Leighton Park School N.H.S. in *Skokholm Bird Observatory Report* for 1950).

CARDIGAN (46).—6 recorded, all picked up on 2 miles of coast, Aberystwyth, Feb. to May (D. G. Sainsbury).

MERIONETH (48).—8 recorded: 3, Talsarnau; 3, Aberdovey; 1, Corwen; 1, Blaenau Ffestiniog; dates not given. (T. G. Walker).



REDWING (*Turdus m. musicus*).
ADULT WITH FOOD FOR YOUNG. SWEDISH LAPLAND.
(*Photographed by RALPH CHISLETT*).



REDWING (*Turdus m. musicus*).
AT NEST. SWEDISH LAPLAND, JUNE 3RD, 1948.
(Photographed by P. O. SWANBERG).



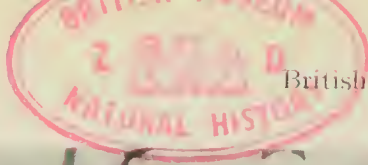
REDWING (*Turdus m. musicus*).
IN A TYPICAL NESTING SITE. SWEDISH LAPLAND.
(Photographed by RALPH CHISLETT).



REDWING (*Turdus m. musicus*).
ADULT AT NEST. DOVREFJELL, NORWAY, 1950.
(Photographed by M. D. ENGLAND).



REDWING (*Turdus musicus coburni*).
ADULT AT NEST. S.W. ICELAND.
(Photographed by G. K. YEATES).



UPPER : REDWING (*Turdus musicus*) IN WINTER. DORSET.
(Photographed by G. K. YEATES.)

LOWER : FIELDFARE (*Turdus pilaris*). ADULT AT NEST. GOTLAND,
JULY 7TH, 1947.
(Photographed by GÖSTA HAKANSSON).



FIELDFARE (*Turdus pilaris*).
ADULT AT NEST. DOVREFJELL, NORWAY, 1950.
(Photographed by M. D. ENGLAND).



FIELDFARE (*Turdus pilaris*).
IN WINTER. ESSEX.
(Photographed by C. W. TEAGER).

ANGLESEY (52).—5 recorded : 1, Caerwen ; 1, Beaumaris ; 1, Llanfaethlu ; 1, Bodorgan (T. G. Walker) ; 1 unknown loc. (Mr. Plews, *per* Prof. R. J. Pumphrey).

YORKS : WEST RIDING (64).—1, Shipley Glen, exhausted, 10th (*per* R. F. Dickens).

NORTHUMBERLAND (68).—1, Longstone, Farne Islands, 3rd, oiled ; presumed same bird, Monk's House, Seahouses, 5th ; dead on Farnes 9th. (*Farne Islands Ornithological Report* for 1950, and E. A. R. Ennion).

WESTMORLAND (69).—1 recorded, Orton, nr Kendal, *ca.* 17th. (*Westmorland Gazette*, Feb. 24th, 1950, *per* K. E. Burgess).

ISLE OF MAN (71).—1 recorded ; King William's College, S. end of island, 10th (*per* Manx Museum).

KIRKCUDBRIGHT (73).—1 recorded : Glenlochan, Loch Ken, dead in loch 18th (Mrs. J. D. Williamson).

ANGUS (90).—1 recorded, Dunninald Estate, nr. Montrose, freshly dead, 16th (J. de B. Stanseld, *Field*, March 23rd, 1950).

BANFF (94).—1 recorded during wreck : Macduff, dead, 14th ; also 1 exhausted, Bridge of Marnoch, March 1st (W. H. Maxwell).

CAITHNESS (109).—2 shortly after wreck : 1, Sandside Head, Reay, 26th ; 1, Skail, between Thurso and Reay, 26th (James Gunn, *per* Dr. I. Pennie).

IRELAND.—“ From the numbers of specimens sent to me or reported or sent to the Irish Museum in Dublin there is no doubt that it was the severest and most widespread wreck of recent years. In many cases I had reports or specimens sent to me from far inland, both in maritime counties and from inland counties—of which the following produced records : Carlow, Kildare, Offaly.

Other counties from which I had reports or received specimens were : Galway and Mayo (some from far inland), Clare, Waterford, Cork, Donegal, Wexford, Wicklow. There is no doubt that Mayo, Galway (as is usual in years of wrecks) and especially Cork were the counties most affected. In matter of numbers, Cork produced far the greatest total, but that may be because on the S.W. coast of Cork there is a useful band of people who take an interest in wild birds. All the same there seems to have been a veritable accumulation on the S.W. Cork coast.”

“ . . . The date of the finding of the majority . . . was about Feb. 15th. My records show severe gales in the week ending 11th—worst on 9th and 10th. Little Auks were found between Feb. 10th (Cork, Galway, Mayo) and Feb. 20th, when 5 were found dead on Eeragh Island, Co. Mayo, which had died probably 2-3 days previously.” (Major R. F. Ruttledge, *in litt.*).

Details of the Cork birds are as follows :—recorded from Baltimore, Castlehaven, Aghadown, Lissygriffin Lake, Goleen ; reported from Drimoleague, Clonakilty, Midleton. Total 11, all stranded 9th-10th. (J. E. O'Donovan, B. O. Regan, *Irish Naturalists' Journal*, April, 1950). Nine, in or near Goleen ; hundreds reported from cove three miles to east ; 13 seen in 3 small coves. (J. Glanville). The total order of numbers must therefore have been very great on this coast.

Additional records will certainly come to light from the southern and south-western counties. It is felt that a complete citation will be of value mainly for county records ; the main trend of the wreck is sufficiently clear from the records already given in this appendix.

More information would still be of value from observers in poorly covered areas, such as the western Highlands and islands, for the winter 1949-50 and subsequent winters.

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XXXVIII. THE REDWING.

Photographed by R. CHISLETT, M. D. ENGLAND, P. O. SWANBERG
AND G. K. YEATES.

THE FIELDFARE.

Photographed by M. D. ENGLAND, GÖSTA HÅKANSSON AND
C. W. TEAGER.

(Plates 29-36).

APART from the Brambling (*Fringilla montifringilla*), of which we have already published a series of plates (vol. xlv, Plates 1-7), the Redwing (*Turdus musicus*) and Fieldfare (*T. pilaris*) are the only two passerines which winter in numbers throughout the British Isles but do not remain to nest. The Redwing, it is true, has attempted to nest on more than one occasion, but that does not alter the fact that comparatively few of our readers will have had the opportunity to see either species breeding. For that reason, quite apart from their intrinsic merit, the accompanying plates will be welcome. From the photographic point of view the pictures taken in England (Plates 34 (upper) and 36) are perhaps more unusual than the others and show both species in typical attitudes with which British observers are familiar.

The pictures of Redwing come from Swedish Lapland, Norway and Iceland. The bird shown in Plate 33 belongs, presumably, to the Iceland race, *T. m. coburni*, and it is interesting to compare it with the typical form shown in Plate 32. The fact that the Iceland bird does not appear appreciably darker may well be due to differences in the lighting, but its breast markings do seem to be "clouded" or "very heavy and dark," as described by observers at Fair Isle and the Isle of May (*Scot. Nat.*, 61: 136; 62: 103). It must, however, be stressed that only at the Bird Observatories is it usually possible to make racial distinctions of this kind and that not all specimens of the Iceland race are so clearly marked.

The Fieldfare has comparatively recently extended its breeding range to Switzerland, and attention may be drawn to a paper in *Nos Oiseaux* (vol. xxi, pp. 149-159) where details are given of its present range and habitat preferences in that country. A more striking extension of range—to Greenland—is the subject of a paper in *Proceedings of the Xth International Ornithological Congress*, reviewed elsewhere in this issue (p. 139).

We might add that there was a very heavy movement of both species, as well as other *Turdidæ*, at the end of October, 1951, Redwings being reported in "immense" numbers at Fair Isle from October 27th to 30th. We have received a few reports on this movement, which seems to have been specially marked in north Scotland, and would welcome further notes.

J.D.W.

NOTES.

Song-Thrush nesting in a Monkey-Puzzle Tree.—In connexion with the note (*antea*, p. 287) on a Mistle-Thrush (*Turdus viscivorus*) nesting in a Monkey Puzzle tree, it may be of interest to record that on May 6th, 1946, at Oxted, Surrey, I found a nest of a Song-Thrush (*T. ericetorum*) in a Monkey Puzzle. The nest contained four eggs and is the only one I have found in such a situation.

K. R. CHANDLER.

Persistent nest-building in the Blackbird.—With reference to Mr. John Southern's note (*antea*, vol. xl, p. 52) on persistent nest building in the Blackbird (*Turdus merula*), it may be of interest that during 1950 I found six nests of this species which I believe to have been built by the same pair of birds, in a garden site occupied yearly for the last ten years.

Of the nests, Nos. 1, 2, 3, 4 and 6, were within a circle of radius 13 feet and of these Nos. 2, 3 and 6, were in the same extensive tangle of ivy on a wall and were within a circle of radius $3\frac{1}{2}$ feet. Nest 5 was 18 yards away in the fork of a hazel.

The first nest was found on March 23rd and was mud-lined. The first egg was laid on the 26th, and the third on the 28th. The nest was next looked at on April 2nd, when it contained only one egg.

The second nest, the young of which flew on May 4th or 5th, was not found until April 23rd. By regarding the fledging and incubation periods as 14 days each, the first egg was laid on or about April 3rd. The third nest, containing one deserted egg, was found on May 28th. The fourth nest (in lilac) was found being incubated on May 31st. It was still occupied on June 4th, but had been deserted by the 11th, when it contained one egg (*cf.* nest 1).

The fifth nest was found on June 20th, with young two or three days old, so its first egg was laid about June 6th. This means that the fourth nest was probably deserted on the afternoon of June 4th or the following day and suggests rapid nest-building of the fifth nest. The latter was found empty with one young (aged about four days) dead near by, on July 1st.

The last nest was found with young about two to three days old on July 21st. They flew about August 4th.

In all, two nests fledged, one more hatched, and another two were partially incubated. The cause of desertion of Nest 3 is unknown and a long gap occurred before the building of the next nest either between Nest 2 and 3 or 3 and 4. Nests 1 and 4 lost two eggs from the clutch and Nest 5 its young. The cause of these losses is a mystery. It is interesting that in the fifth, and possibly also the second, nest the first egg was laid one or two days after the desertion of the previous nest. Mr. Southern's Blackbird began rebuilding the day after deserting, in four out of six cases.

This behaviour is in marked contrast to that of the individuals reported as rearing four or so successful broods from the same nest.
M. T. MYRES.

Wheatear gatherings in spring.—During the spring of 1949, behaviour not recorded in *The Handbook* was observed on three occasions amongst Wheatears (*Enanthe ænanthe*) on the West Suffolk Breck. The best example was witnessed on April 21st on a heath near Elveden. A female was seen in flight low over the ground, pursued by two males. Two other males joined in the chase and all five birds alighted together. Immediately a succession of fights broke out, male versus male, in an indiscriminate manner. The aggressor, or sometimes both birds simultaneously, rushed at his opponent head on, but they rarely struck each other as one usually flew away pursued by the other. Once away from the neighbourhood of the female the males quickly returned and joined the group, soon engaging in another fight, often with a different partner. During these fights there was excited calling. While fighting was in progress a fifth male joined in. It eventually chased the female away in flight and fed with her quietly. With the disappearance of the female the party broke up. Similar behaviour was observed elsewhere on April 21st and 24th, 1949.
R. G. PETTITT AND D. V. BUTT.

[We have submitted this note to Mr. P. J. Conder who has made the following comment: "It seems to me that this describes the usual sort of chasing that occurs on migration when the density of migrants on a particular area of ground is high. Rooke (*Ibis*, vol. 89, p. 206) has described this sort of chasing for the Robin (*Erithacus rubecula*) and I have seen and recorded it in Wheatears (*Ibis*, vol. 91, p. 651). I have never been able to interpret such displays as courtship. If it were a courtship display one could only interpret it as being of the communal type such as one finds in Ruffs (*Philomachus pugnax*) and Blackcocks (*Lyrurus tetrix*). But the wheatears are very rigidly territorial, as are other *Turdidæ*. Any suggestion that the males were fighting for the female must also be rejected: Robins, Redstarts (*Phœnicurus phœnicurus*) and Wheatears all tend to treat females at first in the same way as males and drive them out. A persistent female is accepted in the territory eventually.

I would therefore suggest that this behaviour is typical of the chasing that occurs when the density of migrants is high and when the birds tend to be very mobile. There is a constant intrusion of individual distances or territories that causes chases involving many birds."

It may be of interest in connexion with Mr. Conder's remarks to record an observation by Mr. R. W. Hayman who found 24 Wheatears assembled on a football pitch in Richmond Park on April 8th, 1951. Fifteen were still present on the following morning and unusual numbers were present in the London area at that time.—EDS.]

Five Wrens in succession at one nest.—At the beginning of April, 1950, at Dalhousie Castle, Midlothian, two Wrens (*Troglodytes troglodytes*) were found dead under the window of a wooden garage which had not been used for some time. They were both removed. On April 9th, when a third was found dead in the same place, an examination of the building revealed a half-built nest in a space running right through the wall in a dark corner. It was presumed that the birds had found their way in past the nest while building and been unable to find the way out again, after being attracted to the light at the window. The entrance to the nest from outside was therefore blocked with a piece of wood, firmly wedged to avoid further accidents. By the night of April 11th, the wood had been removed, and two more Wrens, the 4th and 5th to occupy the site, were in possession, and the nest was almost completed. It was not, however, eventually finished or used in that season, but appeared to be an ordinary "cock" nest.

This case is particularly interesting in view of the fact that only the cock Wren is supposed to build in the early stages, so that even presuming the final pair disturbed on the 11th were a cock and a hen, the previous three should all have been cocks. Unfortunately the three dead birds were not sexed; but the two birds first found together (date not recorded, but "several days" before the discovery of the third) were both fairly fresh, and it seems more likely that they were a pair than two cocks occupying the same site in such quick succession. C. K. MYLNE.

[We have submitted this note to the Rev. E. A. Armstrong who comments as follows:—

"There are not enough data for this episode to be interpreted. It should be noted, however, that female Wrens occasionally help to build the outer structure of the nest and also that they are sometimes attracted to the male while he is building. He may lead a female to a partly-constructed nest. Thus it is not very remarkable to find a male and female active at an incomplete nest. Moreover, there is, perhaps, the possibility that Wrens had been accustomed to roost communally near the nest-site. As a rule Wrens are able to find their way out of enclosed spaces though they are sometimes caught in eel-traps hung up to dry. It would seem to me most probable that a female was attracted to the first male and when they penetrated beyond the nest into the garage they were unable to return, and that the third bird found dead was another female who had been keeping company with the male—for two females will associate with a male early in the season. Presumably the territory was soon occupied and the male completed the nest while accompanied by another female. Males will titivate and repair nests made by previous owners of a territory."—Eds.]

Courtship display of House-Martin.—As few accounts of courtship display of the House Martin (*Delichon urbica*) have been published the following may be of interest. On July 26th, 1950, at Lymptone, Devon, a male was seen on the ridge of a roof, walking in the usual shuffling manner to and fro over a few inches, uttering its twittering song continuously and at the same time holding its wings low and well off the body, showing the white rump to the utmost. The head of another bird could be seen on the other side of the ridge, and occasionally the male leaned towards it. Both took flight, circling over the house, the male swinging down towards the roof each time he approached it and uttering a short burst of song. He alighted again, resuming his singing and display, the other bird, almost certainly a female, quickly joining him. As he continued this display he occasionally turned his back to her, exposing his rump to the full, and when he faced her she gently pecked at his beak. After another brief flight they came down to the roof again and during more display he put his beak to hers, the female clinging vertically to the steep side of the ridge-tile as she leaned away from him.

On previous occasions when I have seen rather similar display the male has been perched on the ridge of a roof or on a telephone wire, the wings being fluttered rapidly as they were drooped beside the body, while the female has circled near by in the air. Now and then the male has flown out to her, soon returning to the perch to resume his singing and display. Billing is of frequent occurrence when both birds of a pair are sitting in a partly built nest. I once saw a male clinging to the wall near the shallow beginnings of a nest and singing, pausing once to reach over to the female, which was sitting in the nest, and touch her beak with his.

R. G. ADAMS.

[An account of display in this species by D. W. Bishop (*antea*, vol. xl, p. 54) resembles that given above in some particulars. There are also records of coition at the nest-site (*antea*, vol. xli, pp. 310-311) and on the ground (*antea*, vol. xlii, p. 356).—EDS.]

Displacement activity of Oyster-catcher.—The following notes on the behaviour of a family of Oyster-catchers (*Hæmatopus ostralegus*) were made at a reservoir near Edinburgh on June 11th, 1950. I was standing at the edge of a ploughed field in which a pair of Oyster-catchers, which I knew to have nearly fledged young, were calling anxiously, when suddenly a young bird trotted out of the long grass surrounding the field, in full view of where I stood only 50 yards away. There was a moment of horrified silence; then one of the adults flew up and, landing on the back of the young bird, forced it down out of sight amongst the furrows. The other adult, without any further preliminaries, flew up and alighted on the back of the first bird, apparently attempting to mate.

The first part of this performance had every appearance of being a conscious attempt on the part of what was presumably the female bird to push the young bird into cover. In this it was signally successful, for it took me some time to locate the young bird which had moved to the extreme end of the furrow, a good hundred yards from the point where it had forcibly disappeared. The attempted coition by the second adult, the presumed male, would appear to have been a form of "displacement activity"—the misdirected outcome of the two conflicting emotions of fear and family protection—and this particular form of emotional outlet may have been stimulated by the preceding "attack" on the young bird which, being made from the rear, rather resembled the act of coition.

D. G. ANDREW.

REVIEWS.

Proceedings of the Xth International Ornithological Congress, Uppsala, June, 1950. (Almquist & Wicksell, Uppsala, Sweden, 1952. Price Sw. Kr. 35, or £2 8s. 3d. Obtainable direct from Prof. S. Horstadius, Zoologiska Institutionen, Uppsala).

THIS eagerly awaited Report of 662 pages contains the whole of the valuable and in many cases extremely interesting papers read at the Uppsala Congress, which was of outstanding importance because it brought together the results of a vast amount of research which had been going on disconnectedly in many countries cut off by war and post-war difficulties during a dozen very busy and fruitful years, and also because the excellence of the organisation and handling of the agenda led to an exceptionally high standard of contribution and to a remarkable amount of progress in the focussing of some of the main problems. Although nothing has been wasted on frills (or even on cloth binding) the work is inevitably expensive on account of its many photographs, maps, diagrams and bibliographies as well as its sheer size, but it is an almost indispensable reference work for those who wish to appreciate the pace and nature of recent advances in ornithology, and the extent of ornithological leadership in the development of the biological sciences. Indeed some of those who strove during that hectic week of June two years ago to keep abreast of the flood of good things which poured out often in two or more places and in two or more languages simultaneously may well be excused for finding that they now begin to understand for the first time what it was all about. With the exception of Sweden, Great Britain sent much the largest national contingent to the Congress (73) followed by the U.S.A. (35), Netherlands (33) Denmark (32), Germany (30) France (20) and Switzerland (15).

Apart from Dr. Wetmore's Presidential Address on Recent Additions to our Knowledge of Prehistoric Birds, and two small sections on Regional Faunas and miscellaneous matters, the papers are arranged under four main headings, each introduced by a careful survey of the present position of science in the particular branch. The first on Evolution and Systematics is opened by Dr. Ernst Mayr's paper on Speciation in Birds which forms a most illuminating brief review of the remarkable developments and changes of approach which have occurred during recent years in this branch of ornithology, and which have led to a reduction in the total of recognized world genera of birds from about 4,000 to about 1,500-1,700 and in species from 19,000 to 8,600. Both in Dr. Mayr's paper and in others of this section stress is laid on the importance of ecological factors in modern taxonomy.

Dr. R. Drost opens the next section with a review of the Study of Bird Migration in which again there have been remarkable developments since 1938. These are briefly summarized with a full list of references. Among interesting

papers in this section is an account (in German) of Dr. G. Kramer's experiments at Wilhelmshafen with movable mirrors in an aviary, indicating the important part played in orientation by light from the direction of the sun. Three papers describe the Swedish ringing station at Ottenby and another the vast diurnal migration of birds of prey observed at Falsterbo on the southern tip of Sweden. A report of the Round Table Conference on Bird Ringing summarises the conclusions reached and contains a useful list, compiled by Dr. W. Rydzewski, of all bird-ringing schemes known to be in current operation, based on 26 different countries, and in some cases covering more than one.

Dr. N. Tinbergen's review of Recent Advances in the Study of Bird Behaviour deals with perhaps even more remarkable advances in knowledge than have been shown in the other main fields; fortunately he has now published a much fuller survey in *The Study of Instinct* to be reviewed in our next issue. Papers on Inheritance and Learning in the Song of the Chaffinch by H. Poulsen and one in German on the capacity of birds to distinguish numbers by O. Koehler may also be mentioned.

The introductory review to the last main section is a paper on Population Ecology in Birds by Dr. D. Lack, and the section contains reviews from a series of countries (from Iceland to Hungary) of some of the remarkable recent changes in bird distribution due to a warmer climate, particularly in spring and autumn. There is also a most interesting account (pp. 515-526) by Dr. Salomonsen of the accidental mass immigration of Fieldfares from Norway into Greenland in the second half of January, 1937, and their subsequent successful establishment of breeding colonies there. Dr. Gross describes how the U.S. Fish and Wildlife Service treated 790,314 eggs of Herring Gulls with an oil emulsion spray which prevented them from hatching and thus reduced the numbers on islands off the Maine coast by 70 per cent. during the four years 1945-49, with the object of eliminating their excessive pressure on terns and other breeding birds and upon fisheries and other human interests. P. O. Swanberg's researches on Food Storage, Territory and Song in the Thick-billed Nuthatch are also described and illustrated, bringing out the astonishing fact that these birds not only hide large quantities of nuts underground after fetching them as far as 6 km., over several weeks in the autumn, but that they successfully find and dig out these hoards daily in the winter even when covered with up to 18 inches of snow, with a very small percentage of mistakes.

The relatively speedy issue of this well-produced work adds to the debt which ornithologists owe to its Editor, Professor Sven Horstadius the General Secretary of the Congress, and to his colleagues of the Swedish Ornithological Association.

E.M.N.

LOCAL REPORTS: PENINSULA PROVINCE.

Cornwall Bird Watching and Preservation Society, Twentieth Annual Report, 1950.

ABOUT 20 pages of the report are devoted to "General Bird Notes for 1950" followed by three further sections of general notes under the headings "The Walmsley Sanctuary, Tregorden and Camel Estuary," "The Cornish Seas," "The Scilly Isles." There is incomplete cross-referencing from the main section to the Walmsley Sanctuary section, but none to the other two sections. Thus to obtain the complete picture of a species in the area covered by the report, reference has to be made to 3 or 4 different sections. The more unusual bird notes include:—Chough, there is no evidence that any broods were reared. Golden Oriole in Scillies in May. Two Crossbills in Falmouth in January. A late Snow-Bunting on April 9th, and several in September and October. The increase of House-Sparrows recorded in the last Report is said to have been maintained in a most spectacular manner. Tawny Pipit on October 13th and 22nd at St. Columb Porth. Water-Pipit,

2 on Marazion Marsh on March 30th, and one on April 5th. Nuthatches reared a brood in the wall of a house. Woodchat Shrike seen on June 5th. No winter records of Chiffchaff are given. Yellow-browed Warbler on October 18-20th. Breeding records of Garden-Warbler near Gweek and Antony, St. Germans. Desert-Wheatear on August 29th. A female Common Redstart on March 3rd and a male and female on March 4th are reported from the cliffs at Bude without mention of any evidence of identification. House-Martin, at Tresco on the remarkably early date of February 19th. Hoopoes on February 21st (unusually early), twice in May and one August. Immigration of Barn-Owls into West Cornwall on a considerable scale is recorded in January based on numerous records of daylight hunting; some 10 birds were later found dead, probably of starvation (thus supporting a suggestion in the Dorset report that the exceptional numbers seen in daylight in many parts of S.W. England east to Hants. in 1949/50 were related to scarcity of nocturnal prey, and not solely to abundance of Barn-Owls). Two or three Rough-legged Buzzards are recorded. Marsh-Harrier present at the end of 1949 remained till January 19th. Spoonbills wintered in both seasons on the Tamar where an immature remained all summer. Purple Heron on Scillies in April. Night-Heron reported several times in March at Carne Creek and one in May at Marazion Marsh. Three Bitterns in winter. Whooper Swans wintered in both seasons. Seven Barnacle Geese in March. Great Shearwater on Scillies crossing on August 26th, and on September 16th a shearwater with dark under-parts is recorded as a Sooty. Fulmars bred at a number of places. Great Northern Diver wintered in Mounts Bay area. Black-throated Diver seen in March. Birds whose appearance agreed with that of Rock-Dove bred in two localities, in a cave and a rabbit burrow on a cliff. Black-tailed Godwit wintered in both seasons on the St. Germans river, and its tributaries. About 9 records of Grey Phalaropes between August and November. A bird on November 21st with "a long, slender slightly curved bill" is rather surprisingly recorded as a Red-necked Phalarope.

An American Pectoral Sandpiper on Camel Estuary on October 16th. Wood-Sandpipers at four localities in August-September, up to 4 birds together. Details of a reputed Greater Yellowshank, accepted in the Report under review, have been submitted to *British Birds* and rejected. Spotted Redshank on November 26th. Kentish Plover in August. Up to 5 Avocets on the Tamar between January 1st and March 19th; one on the Helford river in September. Several Black Terns in September/October. Little Gulls in January-April, and September-November. Scandinavian Herring-Gull on January 2nd. Glaucous Gulls in February, March and October. Three Pomatorhine Skuas on September 17th at Newquay, and one in the Scillies on May 29th and September 9th. About 70 Little Auks reported "wrecked" in February. A short article on Roseate Terns in the Isles of Scilly records the re-establishment of a definite colony of 6 pairs on Annet in 1950, where a pair or two have been observed annually since 1946, as well as pairs on other islands. Unfortunately, as we learn from another part of the report, a fire smouldered for a week in July, 1950, burning out a considerable area, in which the Roseate Terns were breeding.

There is also a table of arrival and departure dates of Cornish breeding migrants, and a page is devoted to the weather of the year.

In addition to the General Notes, there is an important paper (12 pages) by Lt.-Col. and Mrs. B. H. Ryves on "The Breeding Habits of the Spotted Flycatcher." This account condenses 30 years' experience under the following headings:—Arrival and Departure of Birds; Voice and Song; Courtship and Nest-site Selection; Nest-Construction; Eggs and Incubation; The Period of Young in Nest; Double Brooding. It concludes with a detailed account of intensive work on two pairs in 1950.

Casual visitors to the county might be able to make some observations on the following points, on which notes are requested.

- (1) The number of breeding House-Sparrows, House-Martins, Starlings and Reed-Buntings in known areas.
- (2) The sites used for nesting, together with any information as to increase or decrease.
- (3) Accurate counts of Choughs, with localities ; a census of these birds is wanted.
- (4) The sites of Starling roosts, and the nature of the roost, whether in reeds or shrubs, etc.

P.A.D.H.

Twenty-third Report of the Devon Bird-Watching and Preservation Society, 1950.

THE main part of this report consists of records for 1950 (50 pages). For recording purposes the county is split up into 8 areas, while a ninth area, West Somerset is also covered by the records, although from the title of the Report one would expect it to refer to Devon alone.

The Report includes a map showing clearly the bounds of each area, and an initial preceding each note indicates the area in which it was made. The great majority of the notes have local significance, but there are also some few notes on calls, food and behaviour. Among the more unusual birds are : Golden Oriole, a pair for 6 weeks in June/July near Newton Abbot, and a male on June 4th near Hartland Point. Two Twites in October. Crossbills in January, March and May at Minehead (Somerset). Blue-headed Wagtail at Minehead in May and September. Great Grey Shrike in March and December. Pied Flycatchers bred near Chagford and on E. Exmoor (Somerset). A Firecrest in W. Somerset in February. Seven wintering records of Chiffchaffs. A Yellow-browed Warbler on the remarkable date of March 11th. Dartford Warblers in two localities on several dates. A roost of about 2,000 Redwings in rhododendrons. Hoopoes in May and June. A Marsh-Harrier in March. Four nests of Montagu's Harrier hatched on Dartmoor where a Kite was reported in January. Spoonbills were present throughout the year except in June, up to seven in December on the Teign, Tamar and Tavy estuaries. A Bittern on December 28th. Whooper Swans wintered on Tamar Lake in both seasons and were seen elsewhere in January and December. Long-tailed Ducks at the beginning and end of the year, spread over 5 months and three localities. Eiders were also seen in three localities, in February-March and December, maximum 13 together. An important breeding record is of a Storm-Petrel incubating a fresh egg in S.E. Devon in a hole also containing a badly stained egg presumably from previous year ; the report states "it is apparent that breeding may have taken place regularly undetected." Fulmars were proved to breed on Berry Head, as last year, and Scabbacombe. Two Great Shearwaters on September 6th seen on a crossing from Lundy to Bideford. Twenty Black-necked Grebes were reported at Dawlish Warren in February and 28 there in December. Two winter records of Black-throated Diver. About 30 Black-tailed Godwits wintered on the Exe estuary in both seasons. An American Pectoral Sandpiper was on Porlock marsh (Somerset) September 20th-October 7th and one at Wembury October 7th-15th. (*antea*, vol. xlv, p. 252). About a dozen records of wintering Common Sandpipers. A Wood-Sandpiper in October at Wembury. Spotted Redshanks were recorded in all months except May and June. Five winter records (January, February, December) of Greenshank from three localities, maximum 7 birds together. A Kentish Plover wintered on the Exe Estuary from the beginning of the year to March 26th and one from October 7th to December 31st ; 2 reported at Fremington in September. About 10,000 Lapwings in the Braunton district at the end of the year. Avocets wintered on the Exe and Tamar estuaries in both seasons (5 in January, 7 in December). A reported Pratincole is square-bracketed. Black Terns were seen in spring and autumn. A juvenile Sabine's Gull at Woolacombe on September 22nd (*antea*, vol. xlv, p. 256). Little Gulls in February

and March. An assembly of gulls at Erme Mouth in January included 2,000 Great Black-backs. Glaucous Gulls were seen at Slapton on April 30th, and Plymouth May 7th; an Iceland Gull was seen at Wembury on April 22nd, and another at Plymouth on May 7th. Kittiwakes bred Scabbacombe, Berry Head and Lead Stone (Torbay). Twenty-one "wrecked" Little Auks recorded. A Spotted Crake was found dead at Braunton in September. Several reports of Black Grouse from each of four out of the eight Devon recording areas; it would be interesting to know whether the bird is increasing.

In most cases of rare or difficult birds some evidence of identification is given, but in a few instances, for example immature Black-throated Diver, immature Glaucous and Iceland Gulls, it is not even mentioned that full details have been supplied, though in the case of two of the gulls details were published in our pages, (vol. xliii, p. 409) and attention might be directed to this. Such a statement not only strengthens a reader's confidence in the record, but emphasises to contributors the need for careful note-taking and for submitting these notes in detail.

The Report appears to mention all the species recorded in the area during the year, yet trivialities have in the main been avoided. We prefer this treatment to the practice in some reports of omitting entirely an unspecified number of the species of regular occurrence.

Several rarities in the Devon report which are reprinted from the *Lundy Field Society Report* 1950, have been omitted from the present review.

In addition to the Records, there are migration reports on Wheatear, Swallow, House-Martin and Swift. For House-Martin, there are phenomenally early dates; February 19th and 20th and March 9th, but the observers' names unfortunately are not given. Reports of this species seen on March 1st and caught on March 2nd come from a non-ornithologist. Attempts to trace the course of arriving Swifts included a motor boat patrol some distance out to sea, but the lack of success there, and shore observations, suggested that the birds were crossing the Channel too high to be seen.

Separate reports are also made on a census of Nightingales (totalling about 63 birds, although rather incomplete and apparently not confined to singing males); Black Redstarts (showing a minimum of 45 birds) and an enquiry into the habits of Spotted Flycatcher giving observations mainly on arrival, song, breeding and food. The last two enquiries are being continued.

The list of members totals some 400 names.

P.A.D.H.

Report on Somerset Birds, 1950.

MOST of this report is occupied by Notes (20 pages), separated under each species into the district in which the observation was made. A map is included, which shows the limits of these districts of which there are seven. We extract the following:—

Crossbills in W. Somerset in January, March and May, and 6-10 at Winscombe in June. Water-Pipit at Blagdon on October 29th. Blue-headed Wagtail at Minehead in September, and a Waxwing there in January. Pied Flycatcher spreading on Exmoor. Firecrest at Blagdon on December 10th and Dunster on February 19th. One or two wintering Chiffchaffs. Half-a-dozen or more records of wintering Black Redstarts. Four Swallows on February 25th. Hobbies in 2 localities in May or June. Rough-legged Buzzard in November. Common Buzzard still increasing and spreading. Bittern in December. Bewick's Swan in both winters, maximum 23. Red-crested Pochard at Cheddar reservoir on September 24th. Ferruginous Ducks at Durleigh reservoir on January 2nd and 4th, and at Cheddar on December 26th. 20-30 Goldeneye at Blagdon and Cheddar reservoirs in January/February. Two Long-tailed Ducks at Durleigh reservoir in January. Two Gannets fishing in Blagdon reservoir on September 18th. Black-throated

Diver at Blagdon in February/March. Great Snipe at Blagdon on December 27th. Grey Phalaropes in 5 localities. About 2,000 Knots on Steart Flats in January. American Pectoral Sandpiper at Porlock, September 22nd to October 4th. Several wintering Common Sandpipers, and one Green Sandpiper. Several records of Black Terns in spring and autumn, including parties of *c.* 70 and 46 on May 13th. Remains of an immature Sabine's Gull at Cheddar in September. Little Gull at Durleigh in February. Immature Glaucous Gull on the river Avon in February/March. About 25 Little Auks recorded in the February "wreck."

A number of these records are duplicated in the Devon, Mid-Somerset and Bristol reports, and some have already appeared in *British Birds*.

The report also contains 3 pages of arrival and departure dates of migrants (including a House-Martin on March 29th), and a list of some 130 members.

P.A.D.H.

The Mid-Somerset Naturalist Society—First Report and Reference Book, November 1949-January 1951.

THIS new society is centred in Bridgwater and the first report is intended to be "a small handbook which will be a guide to both local and visiting naturalists and also to beginners." About half the Report is devoted to birds: "Introduction to Bird Report" by D. H. Perrett, "Items of Outstanding Interest" (3 pages), "Systematic List" (10 pages), and "Observations on Sheld-Duck" by D. H. Perrett. The area covered is rather loosely defined as the "district consisting of the Central Somerset plain, with the well-wooded Blackdowns and Quantocks to the south and west, and the Mendips to the north and east, extending to the sea at Brean Down." A map of a much wider area, printed in the Report, gives no clearer idea of the area covered, nor shows all the features mentioned above; in fact it serves to emphasise that several records (e.g. from Dunster, Minehead, Weston-super-Mare) are outside the area indicated.

One object of the Report is stated to be "to give a list of birds definitely identified in our district since the formation of our Society in the autumn of 1949" which seems difficult to achieve until the district is specific, and calls for co-operation with the county ornithological body already covering the area. At the same time, if the county body were offered the records in the same form as published in the Report under review, we can understand that it would find them of little value, lacking as they do in most cases either date or locality, and often both. The systematic list is a status summary; for example:—"Raven. Resident. Local and chiefly confined to coastal areas." The "Items of Outstanding Interest" often add nothing of consequence, for example "Raven. Two fledglings found in nest." Rather worse than average is "Greenland Wheatear arrived late March and remained until November 10th"—a statement evidently badly expressed or erroneous, probably both. Better than average is "British Black Grouse seem to be increasing in numbers."

The short article on Sheld-Ducks records that in 1950 numbers at Steart were at a low ebb in January, rising to 800 adults (and about 1,000 young) in June. Thereafter, unlike the habit of this bird in some other localities, adults increased steadily in numbers to 1,800 in September and 2,400 in October, and decreased from mid-November to under 100 by the end of the year. As in the rest of the report, few exact dates or figures are given.

P.A.D.H.

CHANNEL.

Report of the Natural History Section of the Wiltshire Archæological and Natural History Society, 1950. (Reprinted from the Wiltshire Archæological and Natural History Magazine, Vol. liv, June, 1951).

THIRTY pages of this report are devoted to birds, with 54 contributors. The more interesting items in the systematic notes include: A Raven over Marlborough Downs in March. Resident Starlings were showing yellow or

mainly yellow bills by December 25th when flocking birds still had completely black bills. Crossbills bred near Redlynch. Cirl Buntings in several localities, and two breeding records. It would be interesting to know the points on which an apparently silent party of Tree-Pipits were identified, on the exceptionally late date of October 22nd. White Wagtail on May 27th. Twenty-three pairs of Red-backed Shrikes were located in the neighbourhood of Redlynch, "a remarkable increase from the two pairs in the same area in 1949." Dartford Warblers showed an increase, and apparently Stonechats also. Several Hedge-Sparrow nests contained dead nestlings on April 26th, following snowfall. Hoopoes on two dates in May and one June. A pair of Long-eared Owls bred. Buzzards bred in several parts of the county. Two winter records of Bitterns. Long-tailed Duck in October. Several pairs of Curlew probably breeding. A Golden Plover of the Northern race in April. A number of Black Terns in May, also recorded in October. A dead Little Gull on February 26th at Savernake. Six Great Black-backed Gulls at Larkhill in December. Eight Little Auks in the early part of the year. Red-legged Partridge reported from three localities; Quail from five.

Over six pages are allotted to lists of arrival and departure dates of migrants, although most of the information appears to be of little consequence.

A report is made on a two-year Redwing and Fieldfare enquiry, giving some information on autumn arrival, winter distribution and habits. The observers were asked to take the same walk once a month, on a specified date, and to note numbers and behaviour. No intensive observation was undertaken.

A largely negative account is given of autumn migration across high ground at Marlborough. P.A.D.H.

Report on Dorset Birds, 1950—(Reprinted from the *Proceedings of the Dorset Natural History and Archaeological Society*, Vol. 72, pp. 149-172, 1950) (Ed. by Dr. K. B. Rooke).

THIS report consists of two pages of introduction, a map of the county divided into 19 areas to which records are related, followed by 20 pages of closely printed notes, which repeatedly show evidence of careful and critical consideration. "No undue emphasis is placed on rare or unusual events. So little is known about normal occurrences that even the common species offer plenty of scope for investigation." The introduction also states "The fact that current activities are uncovering more problems than they solve is a measure of our ignorance."; it is an indication, too, of the progressive and questing spirit of the Dorset Field Ornithology Group. Some of the species regular in the county have been omitted altogether from the classified notes; we would have preferred to see a list of them. For example not everyone reading the report will know whether records of Red-legged Partridge are too commonplace, or non-existent.

The following are taken from the report: Eight pairs of Ravens reported breeding on the coast. Several records suggest considerable spring and autumn migration of Goldfinch. A few pairs of Crossbills bred. A late Brambling on May 7th. Only two winter records of Chiffchaff (January and December). Dartford Warbler increased decidedly. No Whinchat breeding records. Stonechat is now quite common again. At least 20 Black Redstarts noticed between October 7th, 1949, and March 20th, 1950. Two Hoopoes in May. A Long-eared Owl in June. Seven breeding pairs of Peregrine, which had been reduced to one pair by end of war. Buzzard now stationary or decreasing, suffering widespread and shameful human persecution. Of several very pale Buzzards, some "may have been *B. lagopus*, but feathered tarsi not seen, the only certain field-character distinguishing Rough-legged from exceptional examples of the Common Buzzard." One, probably two, pairs of Montagu's Harrier bred. Three records of Bitterns in winter, and several Whooper Swans. Brent Geese, extremely scarce in recent years, were only reported twice. A number of Sheld-Duck counts are given. Only two Garganey records. Drake Red-crested Pochard on December 24th, 25th and

January 15th, 1951. Long-tailed Ducks in January and November. One Eider in Studland Bay in January and three in March. Shags bred in Portland. Still no evidence of Fulmars breeding, although frequenting cliffs in three or four areas in June. In Poole Harbour Black-necked Grebes reached 43 in January, about 40 in December. Black-tailed Godwits present in every month of the year, with a maximum of over 600 in February. The increase and expansion of the Curlew breeding population evidently continues. Two Wood-Sandpipers in September. Spotted Redshanks seen in July and December, and only three Greenshank records. Two Little Ringed Plovers recorded on May 3rd for the first time in Dorset. A Kentish Plover in August. In April Golden Plovers of the Northern race were recorded for the first time in Dorset. Four records of Black Terns in autumn. A few Arctic Terns in June and July at Abbotsbury. Four pairs of Great Black-backed Gulls nested on Chesil near Abbotsbury. About 13 Little Auks were found, mainly inland, from February 11th onwards.

Casual visitors to the county should note that information is requested on exact localities (with six figure map reference) of proved or suspected breeding, date, numbers, and habitat of :—

Corn-Bunting, Cirl Bunting, Wood-Lark, Tree-Pipit, Meadow-Pipit, Yellow Wagtail, Wheatear, Stonechat, Sand-Martin, Curlew, Woodcock, Redshank.

Inland information is required on the following points for all species of gull :—feeding habits, distribution and roosts, and seasonal changes in these and in numbers, and age-ratios of the inland flocks. P.A.D.H.

The Sussex Bird Report, 1950. (Ed. by C. G. des Forges and D. D. Harber).

ABOUT 65 observers contributed to this report which contains 21 pages of notes. The objects of the Report are stated to be first, to record the unusual, and secondly to record deviations from the picture painted by J. Walpole Bond's *A History of Sussex Birds*, or to give statistical confirmation, where possible, of statements contained therein. Notes which refer to habits and behaviour are not generally admitted. "In cases of doubt we usually apply this test : could the incident recorded equally well have happened in any other county?" Consistent with their admirably clearly defined policy, the editors usually exclude a record of "an uncommon but regular breeding species being found nesting in a haunt in no way unusual to it. Such records are liable to suggest an extension of the bird's breeding range without any justification."

Thus the report is strictly confined to events regarded as significant within the county, and species for which such notes have not been received are omitted.

We extract the following :—

Several records of Crossbills in March and April from three localities. Practically no records of Bramblings. An Ortolan Bunting in October. Richard's Pipit in October. Tawny Pipit in September. Water-Pipit on the Cuckmere Old Channel in March, and again in December. A Blue-headed Wagtail and a "Sykes's type" in May. Great Grey Shrikes in February and May. A pair of Woodchats in May. Five Chiffchaffs seen in February at Eastbourne and Chichester may well have been wintering, as was certainly the case with a bird of one of the northern races at Pagham in January. Dartford Warbler in spring. About 5 Black Redstarts reported wintering in the early part of the year and 3 at the end of the year ; birds were seen in 5 localities in the breeding-season. White-spotted Bluethroat at Thorney on September 4th. Hoopoes in 4 localities in spring. Buzzard recorded several times in summer in central Sussex. Marsh-Harrier in January, April and May. Osprey in August. Spoonbills in January, February, March, April, May, October and December, spread over four localities, up to 3 birds together. A Bittern in December. Several Whooper Swans were recorded in both winters, Bewick's in March and December. Brent Geese were not recorded as winter-

ing at Pagham or Chichester Harbours and relatively few were seen, apart from an easterly passage off the mouth of the Cuckmere of perhaps 1,000 during an hour or so on April 7th. Common Eiders were again recorded a number of times, in January, February, September, October, November and December; the bird on September 19-21 is the only county record for this month. Shag in September. Gannet in all months except February and March. Leach's Petrel and Manx Shearwater in September. Cory's Shearwater on November 19th off Langney Point, and a Sooty Shearwater there on October 6th. Fulmars in May and June, and in April a bird was put off a cliff at Seaford. Several records of Slavonian Grebe and Red-necked Grebes. Two records of Black-throated Diver. Twenty or thirty Black-tailed Godwits wintered early in the year in Chichester Harbour, but none at the end of the year; numbers reached a maximum of c.550 in mid-September. Great Snipe at the Midrips on September 30th. Red-breasted Snipe at Thorney October 15th-22nd. Many records of Grey Phalaropes in September or early October. Red-necked Phalarope at Thorney on September 5th and Pett Level September 30th and October 14th. Some very early Little Stints were seen in the first half of April. Three Temminck's Stints in the autumn. Spotted Redshanks in all months except January, June and November. Little Ringed Plovers seen in a number of localities besides the general area where 4 pairs bred. A pair of Kentish Plovers in June. Dotterel in August. An Avocet in April and 10 together in June. Black Terns in greater numbers than usual in spring. Gull-billed Tern at Shoreham on September 17th. Roseate Tern in July. Several Little Gulls in spring and late autumn. Mediterranean Black-headed Gulls in September, October and November. Iceland Gulls on March 25th, April 2nd and 20th and May 8th-18th. Black Guillemot at Langney Point on November 8th. Four "wrecked" Little Auks in February and one seen in December. Spotted Crake in October. P.A.D.H.

The Hastings and East Sussex Naturalist for 1950.

TWENTY-THREE pages are devoted to birds, mainly in classified notes. Among Sussex items which do not find a place in the Sussex Bird Report for 1950, we notice the following: Golden Oriole in June, Richard's Pipit in April, Marsh-Warbler in June and July, Bewick's Swan in January. Fulmars at Cliff End (Pett) in May, June and July. About 180 Great Crested Grebes off Pett Level in December. Immature Black-throated Diver (without description) in December. The report also includes notes on that part of Kent lying west of Dungeness. The Kent notes are not separated from those of Sussex, but include:—Shore-Lark in December. House-Martin on December 3rd. Green Woodpeckers outside breeding season extending in coastal area into bushes far beyond the limit of trees. Dotterel in August. About 6 pairs of Stone-Curlews nested on Dungeness. Scattered remnants of the former Dungeness colony of Common Terns try to breed in various spots, generally without success.

There is also an article by A. A. Wright on the effect of wind on the direction taken by migrating Swallows and Martins. His findings, based on over 100 observed movements (not merely separate parties or flocks of birds) are that the birds "approach the coast mainly by certain routes, viz. down the valleys or across marshland; and that these routes are usually followed whatever the direction of wind. On reaching the coast, they turn either E. or W. (roughly) and fly for varying distances along or near it, before setting out to sea; and in this part of their journey they usually (but not always) fly against the wind."

P.A.D.H.

THAMES.

The Essex Bird-Watching and Preservation Society, Report for 1950. (Ed. G. A. Pyman).

THIS report opens with a census, the first complete one, of the county heronries made in 1950. This discloses some striking changes in numbers and distribution since 1928. Although the earlier census was incomplete the

number of nesting sites has undoubtedly increased, but the total of nesting pairs has declined from 216 to 151. Two of the original heronries are extinct, while the one at Walthamstow has increased from 5 to 67 and now holds almost half of the total nesting population of the county.

The notes contain records of a number of Waxwings in January to March, two Golden Orioles in May and June, a Dipper and a Shore-Lark in December, two Wrynecks on October 12th, a late date, Eiders in August and December and a flock of 200-300 Black-tailed Godwits in October. The nesting of Wigeon, Pochard and Oyster-catcher is also recorded. A separate report follows on the birds of Abberton reservoir, a truly remarkable place. About 20 pairs of Sheld-Ducks nested, some of them using the drains on the slopes of the concrete margins, 25 pairs of Shoveler, 25 to 30 of Tufted Ducks, one pair of Gadwall, probably two of Garganey, one or two of Pochard, about 40 of Common and 11 of Little Terns and 1,000 pairs of Black-headed Gulls, all on the island, while about 45 pairs of Great Crested Grebes also nested. This inland nesting of the Common Tern is notable and it seems curious that the main report says nothing of any coastal colonies. Of casual visitors at Abberton a Little Egret on August 18th, eight Spotted Redshanks on February 26th and five on March 5th call for special mention. N.F.T.

London Bird Report, No. 15, 1950. (Ed. by C. B. Ashby).

THIS report summarizes the observations of 336 contributors; this is a record for the series and is without doubt far higher than for any other local report in the country. One result of this heavy density of observers is that the status of many species in the London area is known with considerable accuracy. Certain species to which special attention has been paid are dealt with in papers following the classified notes. Thirteen pairs of Black Redstarts in the City of London reared a record total of 24 broods; in two cases a third brood was successfully reared after earlier failures. The results of the census of Great Crested Grebes have already been incorporated in a paper in *British Birds*: the total of adults present in the summer of 1950 is estimated at 557, 242 on gravel pits and 315 on other waters. Monthly duck counts have continued, and a paper continuing one in the 1948 Report summarizes results for 1949-51. It is suggested that after a setback in 1947 the numbers of Mallard are now about 33% above those for the winter of 1938-39. Average winter maxima for some other species are: Pochard—1,000; Tufted Duck—2,500 to 3,000; Goosander—150; Smew—100; an interim report on the Starling enquiry suggests that the large roosts in central London, which have a peak of about 100,000 birds in June and July, are composed mainly of native birds; out of 125 recoveries only two are from overseas.

The classified notes contain further detailed figures for some species. At least 17 pairs of Wood-Larks "out of an approximate total of 45 pairs or presumed pairs" bred in 1950, and there are records of breeding, or attempted breeding, in all the London counties except Herts. In 1946, 11 pairs bred out of a known population of 17 or 18 pairs, so it seems that the species is increasing rapidly. The Stonechat, on the other hand, continues to make very slow progress; many winter records are given, but only four breeding sites were known in 1950 and one of these is only a "probable." Only one definite breeding record is given for Wryneck. Figures of a different kind resulted from a trip by launch over 20 miles of the Thames through London on January 29th. This gave a total of 691 Herring-Gulls and 235 Great Black-backs, an interesting indication of the extent to which the latter is following the inland trend of the other species.

It seems unlikely that many rarities can pass unobserved through London's net of observers. The area did well in the autumn of 1950 as is shown by reports already published in our pages of American Pectoral Sandpiper, Baird's Sandpiper, Grey Phalaropes and Sabine's Gulls; the last two are appropriately subjects of illustrations in this Report. Other records of interest include unusually large flocks of Bramblings in many parts of the area

in the early months of 1950; a Water-Pipit at Stone Marshes, Kent, in December; several reports of "variant" Yellow Wagtails; a Great Grey Shrike at Hampton Court on May 30th; a Firecrest on Wimbledon Common on March 19th; a Hoopoe at Sanderstead, Surrey, which is an addition to our published lists for 1950; a Storm-Petrel at Staines on November 11th, the first in the area this century; a party of Dotterels at Heathrow from August 26th-30th (see *antea*, p. 110). Shoveler bred in Middlesex for the third time.

There is a report on the bird census in St. James's Park and the Green Park. Reference in the introduction to some outstanding features of the year gives further evidence of the damage done by the late April snowstorm. J.D.W.

(1) *The Report of the Oxford Ornithological Society on the Birds of Oxfordshire, Berkshire and Buckinghamshire in 1950.* (Ed. D. W. Snow).

(2) *The Middle Thames Naturalist 1950.* (Bird Section).

It appears to be inevitable to take these two reports together, for the second of them covers S. Bucks. and S.E. Berks., and the more important of its records from that area are incorporated in the Oxford report. They contain a wealth of information of considerable future value, when the time arrives for working out the distribution in the three counties of the more local species, location and character of roosts, roosting flight lines, migration routes, &c., &c., as well as the assessing of the status of the less common visitors. Amongst notes of special interest may be noted the probable nesting of a pair of Dippers in Oxfordshire, the proved nesting of Wigeon and Little Ringed Plover, each at two localities in Berkshire and of the Pochard and Tufted Duck in all three counties. Amongst the less common visitors are a Water-Pipit in Bucks, February 12th and 14th, single Ring-Ouzels in all three counties in March and April, a Hoopoe in Berkshire on June 3rd, a Goshawk in Oxfordshire, January 2nd to 6th, single Bitterns in January, November and December, two Bewick's Swans in Berkshire, March 5th, a Ruddy Sheld-Duck on May 11th, a Ferruginous Duck in Oxfordshire, July 16th, single Fork-tailed Petrels in Berks. and Bucks., a Black-necked Grebe in Berks., February 11th, and a Black-throated Diver from February 3rd to April 4th, a Great Snipe, September 10th, two Temminck's Stints in May, a wintering Common Sandpiper and Spotted Redshank, a Kittiwake in Oxon., two Little Auks and two Little Gulls in winter. N.F.T.

TRENT.

The Lincolnshire Naturalists Union Transactions for 1950, Vol. xii, No. 4 (published December, 1951). Ornithology, by S. A. Cox.

THESE records include several notes of interest. Wood-Larks bred in several places near Brigg and the Short-eared Owl at Scotton.

A cock Brambling first noticed in the Limber beech-woods on May 31st remained there until at least August 4th and tried, without success, to acquire a hen Chaffinch as a mate (*cf. Leicestershire and Rutland Report*, and *antea*, vol. xlv, p. 17). A Chiffchaff frequented a Grimsby allotment from February 13th to March 13th; the first normal summer immigrant Chiffchaff appeared on March 23rd (*cf. ante*, vol. xlv, p. 86). A Hoopoe was seen at Brattlebury on October 8th, and an early Spotted Redshank on February 6th.

A.W.B.

Derbyshire Archæological and N.H. Society: Ornithological Record for Derbyshire, 1950. (Compiled by W. K. Marshall).

OF breeding records the most noteworthy were those of the Little Ringed Plover on the River Trent (*ante*, p. 64), of the Pied Flycatcher in site of previous year (and also in 1949 in Chatsworth Park) and of Dunlin, several pairs, among cottonsedge in the N.W. of the county. New to previous records of recent years are: a pair of Ferruginous Duck from mid-December,

1949 to the 3rd week of March at Butterley Reservoir, a Fulmar in Lathkill-dale on 18th December, 1949 (*antea*, vol. xlv, p. 110) (there was a previous Derbyshire record in 1847), and Grey Phalarope at Bradwell on September 17th (Whitlock's *Birds of Derbyshire* gives a number of records between 1770 and 1891).

A table of waders seen at Barbrook Reservoir in August and September is given. A.W.B.

Leicestershire and Rutland Ornithological Society Report for 1950.

A GOOD map of the two counties makes it far easier for the outsider to follow the details of this report than is the case with most local journals. The important reservoirs of Eye Brook, Swithland, Stanford and Cropston have been well covered by several observers, who give a good picture of the avifauna of these waters in central England. At Eye Brook, for example, there were a herd of 22 Bewick's Swans, 39 Goosanders and 11 Smews at the end of December, up to 1,400 Wigeon in February, 3 Velvet Scoters in April, 150/200 Great Crested Grebes in January and February, Red-necked, Slavonian and Black-necked Grebes at various dates, numerous waders including Wood-Sandpiper, Spotted Redshank and Little Ringed Plover and a winter roost of 10/15,000 Common and Black-headed Gulls. The Ferruginous Duck was recorded from Stanford and Swithland Reservoirs in March and December. At Swithland 28 Scaup were seen on December 6th, a large flock for an inland water, and at Stanford two Grey Phalaropes in September, the first recorded for these counties. There is a table shewing the ten wildfowl counts in the year for the International Wildfowl Inquiry at the four chief reservoirs and another table gives the sites where 196 Great Crested Grebes were counted on or near June 7th.

From Beacon Hill (which apparently is not shown on the otherwise useful map) several interesting birds were seen: two Alpine Swifts on May 24th and Goshawks there and elsewhere in February, October and November; the presence of two Ravens seen there from June 11th to 14th suggests a possible escape from captivity. The Buzzard was seen in the Charnwood Forest district in spring and summer as well as in the earlier months, but there was no evidence of breeding, nor did the Hobbies, reported to be shot annually by a keeper at Outwoods, have a chance. Cannot the perpetrator be prosecuted if his employer is not public-spirited and energetic enough to see that the law is kept?

Other items of interest were a wintering Chiffchaff at Quorn, the breeding of Quail, an increase in the Redstart population of Charnwood and substantial increases in the numbers of Kingfisher and Barn-Owl. At Old Dalby on May 31st a cock Brambling was seen feeding with a hen Chaffinch and behaving as if paired; a similar instance recorded in the Lincolnshire Report should be compared with this. A.W.B.

MERSEY.

The Liverpool Naturalists' Field Club: Proceedings and Notes for 1950. THE most interesting records among the bird notes are those of the Scaup which frequent the sea off the coast of Wirral in winter:

In January about 5,000	end of April nil.
In February about 2,000	end of November small number
In March about 1,000	end of December about 1,750.

The same observer gives careful data of the fluctuating numbers of Bar-tailed Godwits on the same coast. Black Terns, far more commonly found over the Cheshire meres, were seen at Meols and Hilbre island on the coast in September and October. A Black Guillemot was seen on a sand-bank at Meols on September 23rd, a great rarity in Cheshire; T. A. Coward in *Fauna of Cheshire* recorded only one occurrence (in 1837, in the Dee estuary). Grey Phalaropes were seen on September 27th at places some miles apart near the Wirral coast. (*cf. ante*, vol. xlv, p. 250). A.W.B.

HUMBER.

Yorkshire Naturalists' Union, Committee for Ornithology, Report for 1950.
(Edited by R. Chislett).

It is difficult to write in reasonable compass a review of this Yorkshire report which has been compiled from the records of a large number of observers in various parts of the county. Particularly valuable are the data from the Spurn Bird Observatory, where much ringing has been done.

Nesting records include successful breeding of Raven; and, in the East Riding, of Wood-Lark; Pied Flycatchers continue to extend their breeding range and many use nest-boxes; the Reed-Warbler's range has extended in Holderness; the Short-eared Owl nested on moorlands in E. and W. of the county; two pairs of Common Buzzards reared broods, but no nest of Montagu's Harrier was found in 1950 although birds were seen; Shoveler, Pochard and Tufted Duck nested in several localities; there were about 90 Great Crested Grebes in the county in the breeding season; three and probably four pairs of Little Ringed Plover nested.

Passage was particularly well marked and observed at Spurn where the maximum number of Chaffinches was noted between October 6th and 28th and the autumn influx of Blackbirds from October 19th; Pied Flycatchers (89 trapped) mainly in August, September and October; Wrynecks and Ring-Ouzels were passing between May 9th and 15th.

There are many records of birds uncommon or rare in these islands. On April 23rd a cock Golden Oriole at Spurn; on December 8th eight Serins near North Otterington were identified by J. P. Utley, and were seen again four miles south on the following day (*cf. Northumberland and Durham Report*). An Ortolan Bunting was seen on March 11th at Shadwell, Leeds. Shore-Larks were few (February and November) but Great Grey Shrikes were recorded at least 15 times from January to March and October to December. Waxwings occurred in a number of localities from January to March, but in no great number. Red-breasted Flycatchers were seen at Spurn on October 5th and 22nd and Icterine (August and September) and Barred Warblers (July 31st) were also found there. The Desert-Wheatear (*antea* vol. xlii, pp. 179-183) which was first seen on November 9th, 1949, and recorded in the Report for that year, remained in the Halifax area, where it was discovered, until January 22nd. There was a Red-spotted Bluethroat at Spurn on October 28th; a Hoopoe at Boltby on May 10th; Marsh-Harriers in February and October; Whooper Swans in many places, but rather fewer Bewick's Swans. On January 15th at Swillington Ing K. Brown saw a drake Green-winged Teal (*antea*, vol. xliii, p. 190). There were inland occurrences of Long-tailed Duck in October/November/December, of Velvet Scoter in January and July, and of Red-breasted Merganser in May. A Grey Phalarope was seen at the Gorpse Reservoir in October and two Avocets in September at Redmires Dam, Hebden Bridge, near the Lancs./Yorks. border. Two Stone-Curlew were seen on the Wolds in May and one from August 14th to 25th at Spurn. A young Sabine's Gull at Winterset Reservoir, September 19-29 has already been recorded in our pages. A Long-tailed Skua was found dead at Helmsley in autumn. Black Guillemots were found at Filey and at Flamborough.

The recoveries of ringed birds marked in Yorkshire or of others ringed abroad and recovered in Yorkshire have been numerous and of considerable interest. Of birds marked at Spurn a Linnet was recovered at La Rochelle, a Song-Thrush in N. Portugal, a Blackbird in Jutland, and at Spurn a Swedish Blackbird was caught and released. A nestling Lesser Redpoll marked in the West Riding was recovered in Belgium; nestling Willow-Warblers from Shipley and Horsforth were both found in North Spain and a Merlin, ringed on June 25th, 1944, in the Pennines near the Lancs./Yorks. border, at Rochefort, France, in March, 1950.

Birds marked abroad and recovered in Yorkshire included :—a Swedish Peregrine Falcon, a Norwegian Heron, a Ruff from Swedish Lapland, a Herring-Gull from the Lofoten Islands and a Dunlin from Öland, Sweden.
A.W.B.

TYNE.

N.H. Society of Northumberland, Durham and Newcastle-upon-Tyne : Ornithological Report for 1950. (Ed. by G. W. Temperley).

THIS very full and detailed report, containing observations and data from well over a hundred contributors, is evidence of the flourishing condition of this society.

The records which Mr. Temperley picks out for special mention as items of unusual interest are :

A Serin at Westoe from November 12th to 26th, a new bird for the county of Durham. A small flock was seen in Yorkshire in December (see *Yorkshire N.H. report for 1950*) and this second record goes to show that in all probability the Durham bird was not an escape from captivity as was at first suggested. Great Grey Shrikes were seen in Coquetdale in January and April ; in April in Teesdale ; and on May 7th at Whitley Bay ; and on May 12th a Red-backed Shrike in Northumberland.

Wintering Blackcaps were seen in Northumberland and Durham in December, 1949 and on March 9th, November 12th, December 4th, 1950.

On October 14th a Roller was seen at close quarters some 12 miles north of Newcastle by an observer who was familiar with the bird in Africa. On July 9th a Hobby appeared at Holy Island, when it was seen to take a Sky-Lark ; from February to May a Golden Eagle frequented the Cheviot district ; and on May 28th an Osprey was fishing in the Tweed near Cornhill. Grey Phalaropes were reported in August and September.

Nesting records : The Little Owl continues to spread northwards ; the Short-eared Owl has increased its breeding range ; the Montagu's Harrier again nested successfully in west Durham ; a duck Goosander with a brood of seven young on June 18th on the Coquet ; Turtle-Doves in summer in both counties, but nests not found ; Kittiwakes built eleven nests at South Shields on window ledges overlooking the Ferry nearly two miles from the sea—twelve young reared.

Other records include : a number of reports of Common and Rough-legged Buzzard ; a Red-crested Pochard duck at Gosforth (the chance of its being an "escape" cannot be disregarded (*cf. antea*, vol. xlv, p.29, xlv p.105) ; a Red-necked Grebe in full breeding plumage from July 8th to 18th off Holy Island ; winter records of Common Sandpiper (Jan. 12th, R. Wear) and Greenshank (January 22nd, Beadnell) ; Glaucous Gulls on the coast in May, June and July.
A.W.B.

Farne Islands Committee of the National Trust : Ornithological Report for 1950. (Ed. by Miss Grace Watt).

DETAILS of the year's birds on these islands are interesting, especially when records are compared with the systematic list of Farne Island birds published in Miss Watt's book (January, 1952) on these islands.

Thus no Carrion Crows nested in 1950, although there were 5 pairs in 1948. Nesting Eider Duck showed an increase over the previous four years—430/50 in all. Thirty-two pairs of Roseate Terns nested, a slight increase, and there were more Sandwich Terns than at any time since 1939. Six pairs of House-Martins tried to nest on the Brownsman, the first time this species has attempted to breed on these islands.

Several species were recorded for the first time on the islands : Bullfinches in March and May, Firecrest in March and September, Waxwing (November, 1949) and Little Stint in July and September. A Whooper Swan in October, 1949 and a Stone-Curlew at the Longstone lighthouse were each recorded for the second time only.
A.W.B.



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BRITISH BIRDS

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BRITISH BIRDS

NUMBER 5, VOL. XLV, MAY, 1952.

BREEDING BIOLOGY OF THE SPOTTED FLYCATCHER.*

BY

D. SUMMERS-SMITH

INTRODUCTION

THE information on the breeding of the Spotted Flycatcher (*Muscicapa striata*) which is analysed in this paper has been obtained from a number of sources, the most important being the British Trust for Ornithology. Altogether some data on 548 nests were available as shown below:

	Before 1939	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	Totals	
British Trust for Ornithology (1933-50)	...	3	1	5	8	10	23	17	21	24	17	31	41	49	250
Whitaker (1893-1946)	...	76	5	3	2	2	4	5	2	—	—	—	—	—	101
Owen (1935 and 1948-1950)	...	4	—	—	—	—	—	—	—	—	50	55	78	—	187
Lewis (1937)	...	3	—	—	—	—	—	—	—	—	—	—	—	—	3
Ryves (1943 and 1950)	...	—	—	—	—	—	1	—	—	—	—	—	—	2	3
Riviere (1949)	...	—	—	—	—	—	—	—	—	—	—	4	—	—	4
Totals	...	86	6	8	10	12	26	21	26	26	17	81	100	129	548

The Nest Records Scheme organised by the British Trust for Ornithology was begun in 1939 though there are a few records for earlier years; in this members of the Trust fill in a card for each nest they discover giving details of dates of laying, hatching, numbers of eggs, etc., and these are subsequently deposited at the Edward Grey Institute. By far the greatest number of Spotted Flycatcher nests recorded in this scheme have been found in gardens or near by and so have been discovered early in the nesting cycle and the subsequent operations noted in some detail. The late A. Whitaker deposited a copy of his personal records in the Edward Grey Institute, and though these include details of one hundred Spotted Flycatcher nests the information given is much less detailed and only a limited number of nest records could be used. In addition Mr. J. H. Owen has very generously supplied data on nests he has recorded in Montgomeryshire from 1948 to 1950. The other information noted above has been obtained from published literature.

Where there is any ambiguity in the data the information has not been used in the analysis. For example where there is only one visit to a nest the clutch size cannot be known with certainty; this is also the case where the nest has not been found until after the beginning of incubation or during the nestling period, as eggs or young may have disappeared prior to discovery. Again unless a visit is paid to the nest at least once per day during hatching or when the young are leaving the nest the uncertainty in the time that this occurs becomes too great. This means that the actual number

* A Publication of the British Trust for Ornithology.

of nests on which information is available for each of the following sections is somewhat reduced ; for instance in the analysis of the breeding season 397 records have been used and in most of the other sections the number has been further reduced. The method adopted in choosing suitable data is discussed in each section with an indication of the errors that are likely to be introduced.

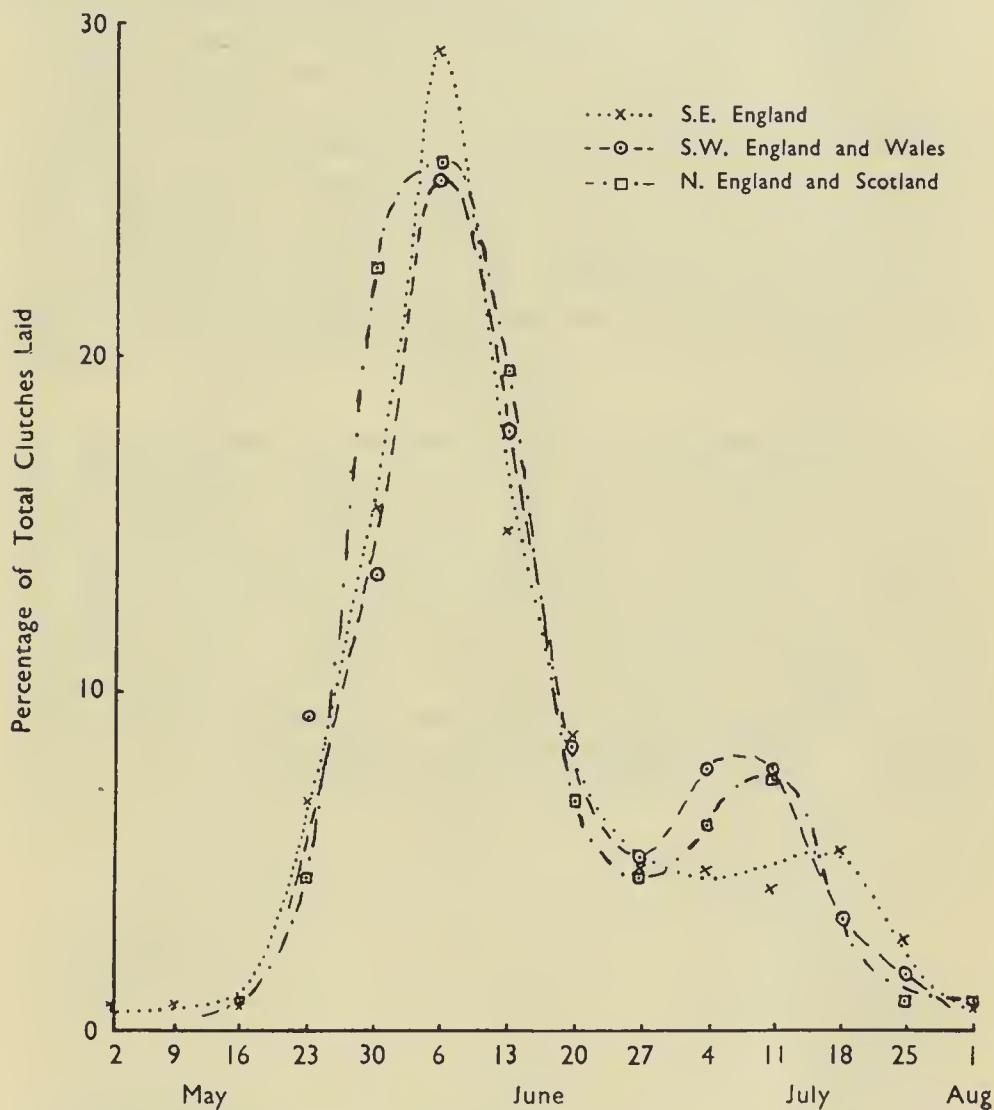
BREEDING SEASON

In the analysis of the breeding season the date of completion of the clutch has been used. The numbers of clutches completed in seven day periods from the beginning of May onwards are shown in Table I. The records have been divided into three regions :— South-east England ; South-west England and Wales ; and North England and Scotland, each region accounting for about one third of the records. The boundary between North and South has been chosen as the southern boundaries of Cheshire, Derby, Notts. and Lincs. and the boundary between South-east and South-west as the eastern boundaries of Warwick, Glos., Wilts. and Dorset.

Clutch completed		TABLE I. BREEDING SEASON							
		S.E.		S.W.		N.		Total	
		clutches	%	clutches	%	clutches	%	clutches	%
April 30–May 5	...	1	0.7	—	—	—	—	1	0.3
May 6–12	...	1	0.7	—	—	—	—	1	0.3
May 13–19	...	1	0.7	—	—	1	0.8	2	0.5
May 20–26	...	10	6.8	11	9.3	6	4.5	27	6.8
May 27–June 2	...	23	15.6	16	13.5	30	22.7	69	17.4
June 3–9	...	43	29.2	30	25.4	34	25.8	107	27.0
June 10–16	...	22	14.9	21	17.8	26	19.7	69	17.4
June 17–23	...	13	8.8	10	8.5	9	6.8	32	8.0
June 24–30	...	7	4.8	6	5.1	6	4.5	19	4.8
July 1–7	...	7	4.8	9	7.8	8	6.1	24	6.0
July 8–14	...	6	4.2	9	7.8	10	7.6	25	6.3
July 15–21	...	8	5.4	4	3.4	—	—	12	3.2
July 22–28	...	4	2.7	2	1.7	1	0.8	7	1.8
July 29–Aug. 4	...	1	0.7	—	—	1	0.8	2	0.5
Totals	...	147		118		132		397	

In the case of the Nest Record cards and also of records from other sources the actual date of completion of clutch is not always known. In including these data the following steps have been employed : (i) if a record is given of the incomplete clutch together with the subsequent size of the complete clutch then the date of completion has been obtained by assuming an egg-laying rate of one per day ; (ii) if the date of hatching or departure of young from the nest is given then the clutch completion date has been obtained by subtracting thirteen or twenty-six days respectively ; (iii) in cases where the nest was found with eggs or young but no information is available about hatching or time of leaving nest then the completion date has been obtained by subtracting six or nineteen days respectively from the date of finding, though where some indication of the state of incubation or age of young is given this

has been taken into account. The estimated dates are probably correct to within a day or two and as seven day totals are used in the table very little error is introduced in this way, which eliminates personal bias towards any period. The information in Table I is shown graphically in Figure 1:



Two interesting points emerge from this :

(i) The curves from the different regions are all bimodal ; the first peak occurs during June 3rd-9th, 25-30% of all nests being completed at this time. The second peak is much less marked and occurs during the first half of July. This shows that while the Spotted Flycatcher may be double-brooded in Britain this probably only occurs with about 20% of pairs. It should however, be pointed out that the enthusiasm for nest finding is greatest early in the season and thus a smaller proportion of late than of early nests may be recorded. About 50% of all clutches are laid

between May 27th and June 16th.

(ii) There is no evidence to show that there is any difference in the breeding season between the different regions of the country selected (except possibly that a very few nests may occur in the South-east region in early May before nests are found in the West and North). This is not surprising with such a late arrival as the Spotted Flycatcher; conditions cannot be much less favourable in the North than in the South by the time that breeding begins.

The Spotted Flycatcher seems to be very susceptible to adverse weather conditions (Ryves & Ryves, 1950) and it would be interesting to see if this would show in the records for any one year; unfortunately there are, as yet, insufficient data to test this point. The rather flatter first peak for the North region suggests a high proportion of repeat clutches and this may be due possibly to desertion caused by adverse weather conditions which are more probable in the North at the end of May and the beginning of June.

CLUTCH SIZE

For the determination of clutch size and its variation with the season only those clutches known to have been completed have been used; i.e. clutches in which the same number of eggs has been recorded on two visits separated by more than twenty-four hours. The effect of the loss of odd eggs due to predation before the discovery of the nest has been ignored and all clutches, whether fresh or partly incubated, have been included. Lack (1948) has shown in the case of the Robin (*Erithacus rubecula*) that this makes only a negligible difference. The date of clutch-completion was derived as already indicated. As before, the records have been divided into three regions; the seasonal variation in clutch size is shown in Table II.

TABLE II. SEASONAL VARIATION IN CLUTCH SIZE

(a) SOUTH-EAST ENGLAND

Clutch completed	Clutches of						Total	Average clutch size
	1	2	3	4	5	6		
April 29-May 5...				1			1	—
May 6-12 ...					1		1	—
May 13-19 ...					1		1	—
May 20-26 ...			1	6	4		11	4.3
May 27-June 2 ...				7	11	1	19	4.7
June 3-9 ...			4	10	20	1	41	4.4
June 10-16 ...			3	11	8		22	4.2
June 17-23 ...			2	7	3		12	4.1
June 24-30 ...				6			6	4.0
July 1-7 ...	2	1	1	2			6	2.5
July 8-14 ...			2	5			7	3.7
July 15-21 ...		2	2	3			7	3.1
July 22-28 ...			2				2	—
Total No.	...	2	3	17	64	48	2	136
%	1.5	2	13	47	35	1.5		

*Standard error of mean ± 0.077 .

(b) SOUTH-WEST ENGLAND AND WALES

	Clutch completed	Clutches of					Total	Average clutch size
		2	3	4	5			
May 20-26		3	4	7	4.6	
May 27-June 2		6	8	14	4.6	
June 3-9	3	10	9	22	4.3	
June 10-16	1	9	9	19	4.4	
June 17-23...	1	4	2	7	4.1	
June 24-30	1	1	3	5	3.4	
July 1-7		1	3	4	3.8	
July 8-14		2	4	6	3.7	
July 15-21		1	2	3	(3.7)	
July 22-28	1			1	—	
Total No.	2	10	44	32	88	4.21*
%	2	11	50	36		

*Standard error of mean ± 0.075 .

*Standard error of mean ± 0.075 .

(c) NORTH ENGLAND AND SCOTLAND

		Clutch completed		Clutches of					Average clutch size	
				2	3	4	5	6	Total	
May 20-26				1	2		3	(4.7)
May 27-June 2			9	12		1	22	4.6
June 3-9		1	2	17		1	21	4.6
June 10-16		1	8	7			16	4.4
June 17-23		1	2	1			4	4.0
June 24-30			5				5	4.0
July 1-7	1	1	3	2			7	3.9
July 8-14	1	1	4	1			7	3.6
Total No.	2	5	34	42	2		85	4.44*
%	2	6	40	50	2			

*Standard error of mean ± 0.077 .

*Standard error of mean ± 0.077 .

(d) GREAT BRITAIN

	Clutch completed	Clutches of						Total	Average clutch size
		1	2	3	4	5	6		
Apr. 29-May 5	...				1			1	—
May 6-12	...					1		1	—
May 13-19	...					1		1	—
May 20-26	...			1	10	10		21	4.4
May 27-June 2	...				22	30	2	54	4.6
June 3-9	...			8	28	46	2	84	4.5
June 10-16	...			5	28	24		57	4.3
June 17-23	...			4	13	6		23	4.0
June 24-30	...		1	1	14			16	3.8
July 1-7	...	2		2	3	8	2	17	3.4
July 8-14	...		1	5	13	1		20	3.7
July 15-21	...		2	4	5			11	3.3
July 22-28	...		1	2				3	(2.7)
Total No.	...	2	7	33	142	121	4	309	4.25*
%	...		2	11	46	40	1		

*Standard error of mean ± 0.044

The average clutch size is plotted as a function of the seven day periods in Figure 2. It remains at about 4.5 from May 20th to June 9th and then decreases steadily to a value below 3 by the end

of July. 85% of the clutches recorded had four or five eggs ; out of over 300 clutches only four had six eggs, two one egg and seven two eggs ; small clutches all occurred late in the breeding season.

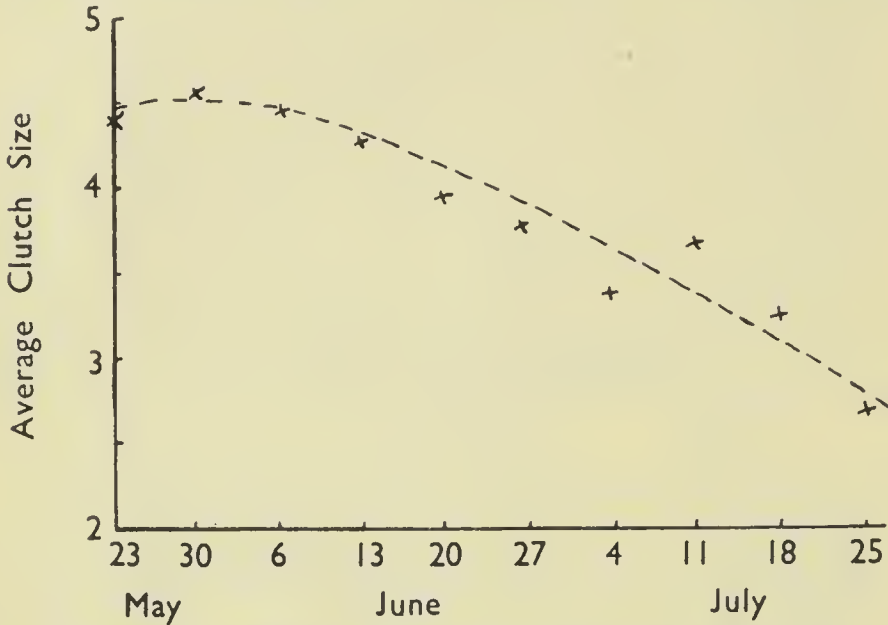


FIGURE 2. VARIATION IN AVERAGE CLUTCH SIZE WITH SEASON.

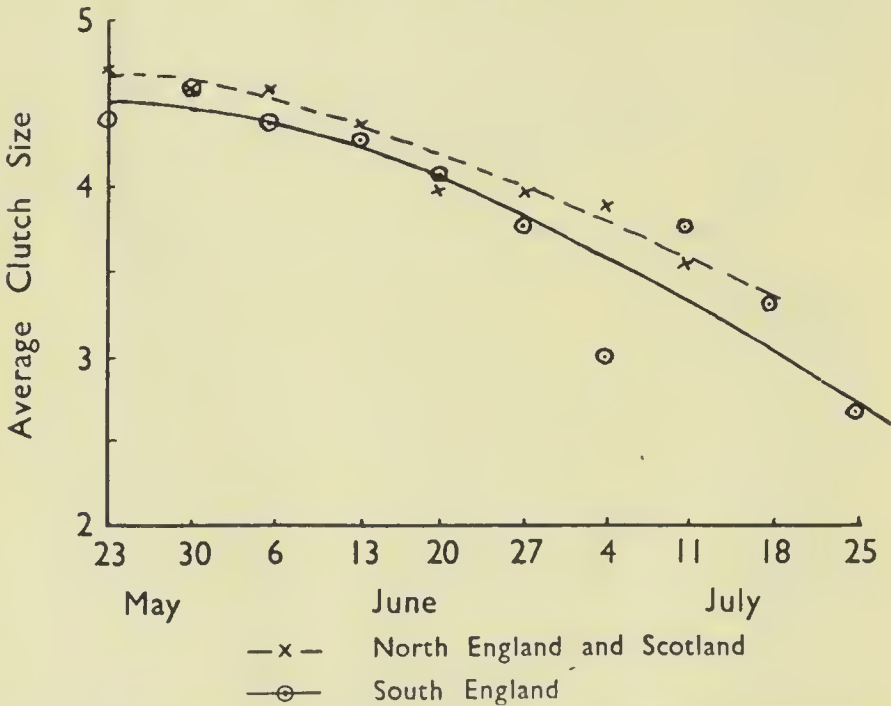


FIGURE 3. REGIONAL VARIATION IN AVERAGE CLUTCH SIZE WITH SEASON.

While there is no significant difference in clutch size between South-east and South-west England, the average clutch size is significantly larger in the North. This is clearly shown in Figure 3

where the seasonal variation in average clutch size is plotted for the North and the combined South regions. Owen's (1948-50) data from Montgomeryshire for 1949 and 1950 (not included in the above analysis) give an average clutch size of 4.1 (55 nests) and 4.2 (78 nests) respectively ; these agree closely with the value for South-west England and Wales derived in Table II(b).

By assuming that most first clutches are complete by the end of June and that most second clutches are laid after this as is indicated in Table I (d), we can derive an average value of 4.4 eggs for first clutches and 3.5 eggs for second clutches.

NESTING SUCCESS

Complete data are available for 267 clutches and 197 broods ; 819 eggs hatched out of 1,052 laid, and from 749 eggs that hatched 609 young flew. This means that 78% of eggs hatched and that 81% of the young that hatched flew from the nest. An alternative method of estimating success is by complete nests ; in this case we get closely comparable figures for the percentages of clutches and broods that were more than 50% successful, which are respectively 81% and 82%. The figures for the success of nestlings may be a slight overestimate as the nests are in most cases not visited more than once per day and it is assumed that, if on one visit the young are almost ready to fly and on the next the nest is empty, then the young have flown successfully. This is necessary, as so few records are available of young birds being seen actually leaving the nest, though it may result in the inclusion of some young which subsequently failed to do so.

The data can be analysed in more detail so that we can examine nesting success in relation to season and clutch size ; this is shown in Tables III and IV respectively:

TABLE III. EFFECT OF SEASON ON NESTING SUCCESS

(a) SUCCESS OF EGGS						
Clutch completed	Clutches	Total eggs	Total hatched	% Hatched	% of clutches which failed completely	
May	...	46	208	150	72	17
June	...	164	711	560	79	13
July	...	40	133	109	82	15
(b) SUCCESS OF YOUNG				% success including/excluding broods which failed completely	% of broods which failed completely	
Clutch completed	Broods	Total young	Total to leave nest			
May	...	35	143	121	85	93
June	...	129	502	403	80	93
July	...	33	104	85	82	96.5
(c) OVERALL SUCCESS						
Clutch completed			% Success			
		May...	...	...	61	
		June	...	...	63	
		July	...	...	67	

The hatching success appears to show a significant increase with advance of season. There is no doubt that this is connected with robbing of eggs by small boys which takes place principally in May whereas later in the season interest in "bird-nesting" has waned; however, this effect may obscure the effect of chilling of eggs which is more probable early in the year and might also account for a lower success at this period. The position of young is rather more obscure. Percentage success is shown in Table III (b) for the total young hatched both including and excluding the figures for broods which failed completely. Excluding the effect of predation (almost all cases of total failure are due to predation) the success is the same for May and June and apparently increases for July; this, however, may not be a seasonal effect *per se*, but could be due to the different distribution of brood sizes in the three monthly periods, if there is a correlation between brood size and success (this point is discussed later). The effect of brood size can be eliminated by considering the success of individual brood sizes. There is no significant variation of success with season for b/3 and b/4, but the figures available are rather small so that this point cannot be settled without further information.

TABLE IV. EFFECT OF CLUTCH AND BROOD SIZE

(a) SUCCESS OF EGGS

Clutch size	Total eggs	Total hatched	% Success including/excluding clutches which failed completely		% of clutches which failed completely
1	2	1	—	—	—
2	10	8	(80)	—	—
3	81	54	67	90	26
4	496	394	79	92.5	14
5	445	349	78	88	11
6	18	13	(72)	—	—

(b) SUCCESS OF YOUNG

Brood size	Total young	Total to leave nest	% Success including/excluding clutches which failed completely		% of clutches which failed completely
1	3	3	—	—	—
2	38	32	(84)	—	—
3	123	93	76	94	19
4	344	284	83	96	14
5	235	191	81	91	11
6	6	6	—	—	—

Table IV shows that both hatching and nestling success is apparently greater for clutches and broods of three and four than for those of five. In the case of eggs this may reflect a greater proportion of infertile eggs in c/5, while in the case of young it would seem that in Britain broods of five can only be reared successfully when the conditions are very favourable. To eliminate any seasonal effect the success of the different brood sizes can be examined for a restricted period. This is shown in Table V for the period June 1st to 13th when a maximum amount of information is available.

TABLE V. RELATION BETWEEN BROOD SIZE AND SUCCESS. CLUTCHES COMPLETED JUNE 1-13

Brood size	Total young	% Success including/excluding broods that failed completely	
3	51	78	95
4	96	81	97
5	110	74	90

Again a lower success is shown for b/5.

It is of some interest to investigate the cause of failure in both eggs and young. This is known for only a proportion of cases. However, we can get some idea of the frequency of the various causes by using reduced totals as shown in Table VI.

TABLE VI. CAUSE OF FAILURE OF EGGS

Clutch	No. in % in		Total		Reduced total	Human				Predators	
size/ month completed	Total eggs failed	cause known	which cause known	eggs laid		Added	interference				
						No.	%	No.	%	No.	%
4	102	74	72	496	360	30	6	—	—	—	—
5	96	62	65	445	290	31	10	—	—	—	—
.....											
May ...	58	37	72	208	150	11	7	12	8	14	9
June ...	151	109	72	711	510	43	8	17	3	49	10
July ...	24	11	46	133	65	7	10	—	—	4	6
All nests	233	157	67	1052	700	61	9	29	4	67	10

The table clearly shows the effect of egg robbing by boys which accounts for 8% of eggs laid in May but for none of those laid in July. There is little to show that the proportion of infertile eggs is related to the season, though it does seem possible that the proportion is higher in c/5 than in c/4. Predation seems to be somewhat reduced in July. Apart from human beings the following have been recorded as predators of eggs and young in the nest. Birds: Magpie (*Pica pica*), Jay (*Garrulus glandarius*), and Little Owl (*Athene noctua*); mammals: Grey Squirrel (*Sciurus carolinensis*), Rat (*Rattus norvegicus*), and Stoat (*Mustela erminea*). Other causes of loss of young are due to drowning and to overcrowding in the nest resulting in birds either falling out or being squashed.

RATE OF LAYING

Most records show that eggs are laid at the rate of one per day, with usually an interval of 24 hours. There are, however, a few cases where apparently a day has been missed though it is possible in these that an egg may have been stolen without the observer's knowledge. On the other hand there is one record of an interval of only 17 hours between the laying of two eggs. We have only records of the actual time of laying in eight nests; in six of these the eggs were laid before 06.30 G.M.T., in one about 09.00 and the other about 16.00.

INCUBATION AND NESTLING PERIODS

Moreau (1946) has indicated the difficulties in estimating the incubation and nestling (fledging) period when visits are paid to the nest only once per day as is usually the case with observers completing Nest Record cards. It is possible in this way that an error of ± 1 day may be introduced. Many records show that incubation begins before the last egg is laid. It is possible in most cases that this is only casual and it is thus not possible to determine the exact start of incubation without more extensive field observation. For this reason it is more satisfactory to choose arbitrarily the day of completion of the clutch as the start of incubation. In many cases hatching takes place over two days; where this occurs it is reasonable to assume that the last egg laid is the last to hatch (Gibb (1950) has established this for the Great Tit (*Parus major*): in these nests the period from the clutch completion date until the last egg has hatched, which gives an accurate period for the last egg, has been used. Provided a large enough sample is available reasonably accurate incubation and nestling periods should be obtained in this way, and, of course, the possible error of ± 1 day for any individual record will be greatly reduced. Table VII gives the incubation data for the three monthly periods as well as for the different clutch sizes.

TABLE VII. INCUBATION PERIOD

		No. of nests with incubation period of :								Av. incub.	
		10	11	12	13	14	15	16	17 days	Total	period
Clutches completed in	{ May	—	2	2	10	6	—	—	1	21	13.2
	{ June	2	2	10	27	15	3	3	1	63	13.2
	{ July	—	—	4	6	2	1	—	—	13	13.0
Clutch size	{ 2	—	—	—	—	—	1	—	—	1	—
	{ 3	—	—	2	3	2	—	1	—	8	13.4
	{ 4	—	2	9	24	8	2	1	—	46	13.1
	{ 5	2	2	5	16	13	1	1	2	42	13.3
All nests		2	4	16	43	23	4	3	2	97	13.2

There is no variation in incubation period either with the time of year or with clutch size. The mean value of 13.2 days agrees well with the figure of 12-14 days given by Jourdain (1938). 15% of nests lie outside the limits he gives, extending from as few as ten to as many as seventeen days, but in most cases these are almost certainly due to the imperfect method used in recording the start of incubation.

It is less easy to determine the nestling period; in 38% of the nests hatching is recorded as taking place over two days (in three nests over three days), whereas in 15% of nests the young did not all fly on the same day. We can thus choose as the nestling period in these cases either a mean period or the maximum or minimum number of days, which are also accurate for certain of the nestlings. The data for the mean nestling period is given in Table VIII. In addition the figures for the minimum and maximum averages are also shown. Data from nests where it is known that the young

flew prematurely, due to the presence of the observer, have not been included, though, of course, this is not known for all the nests in which it occurred.

TABLE VIII. NESTLING PERIOD
No. of nests with nestling period of : Av. Nestl. Per.
10 11 12 13 14 15 16 17 days Total Mean Min. Max.

Clutches completed in	{	May —	0.5	4	9.5	3	3	1	1	22	13.5	13.4	13.6
		June 2	6	8	15.5	28.5	8	3	—	71	13.4	13.2	13.6
		July —	2	1	4.5	8	1.5	—	—	17	13.4	13.2	13.5
Brood size	{	1	—	—	—	—	1	—	—	1	—	—	—
		2	—	2	3	2	5.5	0.5	1	14	13.2	13.1	13.3
		3	1	0.5	4.5	4	11.5	3	0.5	25	13.4	13.2	13.6
		4	0.5	3.5	2	11.5	16.5	7.5	2	44	13.7	13.5	13.8
		5	—	2	3.5	12	6	0.5	0.5	25	13.1	12.9	13.4
		6	0.5	0.5	—	—	—	—	—	1	—	—	—
All nests		2	8.5	13	29.5	39.5	12.5	4	1	110	13.4	13.2	13.6

There is apparently no variation in the nestling period with the time of year, nor does it appear that there is any correlation between brood-size and nestling period, though the figure for b/5 may be shorter than for any other brood size.

Jourdain (1938) gives 12-13 days for the normal nestling (fledging) period with occasional cases of 11 or 14-15 days. The overall average found here is 13.4 days, about a day greater than the value quoted above. The maximum and minimum average values of 13.6 and 13.2 days respectively differ very little from the mean value. The long records of 16 and 17 days may have been due to unfavourable weather conditions and the attendant difficulties of obtaining food. The nestling period was 12-13 in only 39% of the cases recorded ; in 6% of the nests the period was outside the limits given by Jourdain.

We can consider in more detail those nests where the hatching or the departure of the young from the nest took place over more than one day, though of course it must be emphasized that where a period of two days is recorded this may in fact be because the nest was only visited once during the day. The data is summarized in Table IX. From this it appears that prolonged hatching is more

TABLE IX. CASES OF PROLONGED HATCHING AND DEPARTURE OF YOUNG
Clutches Broods
Total Prolonged Hatching Total Prolonged Departure

Clutches laid in	{	May	21	No. 4	% 19	22	No. 3	% 14
		June	63	27	43	71	10	14
		July	13	6	46	17	4	24
Clutch/ brood size	{	1	—	—	—	1	—	—
		2	1	1	—	14	—	0
		3	8	2	(25)	25	2	8
		4	46	20	43	44	7	16
		5	42	14	33	25	7	28
		6	—	—	—	1	1	—
Total			97	37	38	110	17	15

frequent in the later nests; on the other hand there does not seem to be any dependence on clutch size. Cases of prolonged departure of young from the nest are much less common. This is probably because the departure of some members of the brood stimulates the others to leave the nest; however, the frequency with which this occurs does seem to increase with the size of the brood. It is probable that prolonged hatching occurs more often in the nests where incubation begins before the last egg is laid and suggests that this may occur more frequently with later clutches. It is of interest to notice that Gibb (1950) has found for the Great Tit, that, whereas incubation begins earlier, relative to the time of clutch completion, with the advance of the season, it is not dependent on clutch size.

NESTS

The sites for 197 nests were as follows:

Against walls	...	...	117	60%
Trees, in holes	...	...	25	63 32%
in ivy	...	...	17	
in fork	...	...	13	
on stump	...	...	8	
Nest Boxes	...	...	10	5%
Old nests of other species	...	...	6	3%

By far the greatest proportion of nests are on walls, usually in ivy or creepers or bushes trained against walls. The only other important site is in trees. Because of the method of obtaining the results (most records coming from gardens and the neighbourhood of houses) these figures are probably biased in favour of walls. The use of old nests of other species has been noticed quite frequently; the nests of fourteen different species have been reported as used for this purpose (Jourdain (1917) and this investigation). The same nest is not infrequently used for a second clutch though this is not invariably the case.

The distribution of nests at various heights above the ground is given in Table X. The greatest number occur at 5-7 feet.

TABLE X. HEIGHTS OF NESTS ABOVE GROUND

Height above ground in ft. 1-3 3-5 5-7 7-9 9-11 11-13 13-15 15-17 >17											
No. of nests	...	...	7	25	33	27	16	8	5	3	8

This may be rather a low value as lower nests, being easier to observe will be recorded more frequently.

DISCUSSION OF RESULTS

In species which are regularly double-brooded it has been found in Britain that there is a tendency for clutch size to rise to a maximum in early June and then to decrease (Lack, 1947). This has been shown for the Yellow Bunting (*Emberiza citrinella*) (Parkhurst and Lack, 1946), the Robin (Lack, 1946 and 1948) and the Song-Thrush (*Turdus ericetorum*) (Silva, 1949). According to Lack (1947) this is connected with the day length which, being at a maximum in June, enables sufficient food to be collected to feed a larger brood, assuming of course that suitable food is available in plentiful supply

at this period. The Spotted Flycatcher is a late nester, clutches not being completed in the majority of cases till late May or early June, so that we do not find an increase in clutch size to a maximum at the beginning of June; Fig. 2 and Table II indicate that clutches completed from May 20-26th may be slightly smaller than those completed from May 27th to June 9th though the values are not significantly different; after this period, however, the average clutch size decreases steadily as happens with the other species mentioned above. The other influence of day length, the increase of clutch size with latitude, is also found; the overall average clutch size in the north of England and Scotland being 4.4 eggs against a value of 4.2 for the south. That this is not merely the effect of a larger proportion of second clutches in the south, is indicated in Fig. 3, which shows that a higher average clutch size is maintained throughout the breeding season in the north. This increase is shown in Table II as an increase in the proportion of c/5's in the north; there is nothing to show that c/6's are more common in the north than in the south; clutches of this size are, however, extremely rare throughout the country, though according to Lövenskiöld (1947) they are not infrequent further north in Norway.

The successes of both eggs and young are appreciably higher than the values obtained for the Robin and Song-Thrush in Britain:—

			Success of Eggs	Success of Young	Overall success
Spotted Flycatcher	...		78%	81%	63%
Robin (Lack, 1948)	...		71%	77%	55%
Song-Thrush (Silva, 1949)	...	...	71%	78%	55%

It may be that the sample used is biased in favour of successful nests, though this is unlikely as it has been obtained in the same way as that for the Song-Thrush, investigated by Silva, so it is possible that this is a genuine result. It is tempting to relate this higher success to the shorter breeding period of the Spotted Flycatcher, but there are insufficient data for all three species to determine whether there is a real variation of success within the normal breeding season.

Both Lack (1948) and Silva (1949) found an apparent decrease in the nestling period for larger broods in the Robin and Song-Thrush respectively, though they consider that this was not a real effect but due to the seasonal distribution of larger broods. The same tendency has been found for the Spotted Flycatcher, and, though the results are not statistically significant, it seems possible that the nestling period does in fact decrease for larger broods; the effect in the present case cannot be explained as a seasonal one. The reason for such an effect, if it is proved, is somewhat obscure, though it may possibly be connected with the greater activity that presumably occurs in nests with large broods.

The amount of data on a particular species that is made available

by a co-operative inquiry, such as the Nest Records Scheme of The British Trust for Ornithology, opens up a new field in the attainment of comprehensive information. Not only can records be obtained on a scale beyond that of individual resources, but also they are received from all parts of the country and, because of the large number of observers concerned, are largely free from bias. It is to be hoped that inquiries of this nature will receive greater support in the future, because it is only with the accumulation of data that information of real value is obtained. In spite of there being records available on over five hundred nests of the Spotted Flycatcher it is clear that still more records are required to clear up some of the more subtle points, such as the effect of annual variations in weather conditions, the influence of brood size and season on nestling success, and the influence of brood size on nestling period.

Detailed factual information of this sort also provides a yardstick whereby long-term changes may be evaluated in the future. It is possible for instance that, if the present amelioration of climate continues, changes may occur in clutch size; this effect would probably only be small and might not be detected without accurate information being available over a period of several years.

SUMMARY

1. The normal laying period for the Spotted Flycatcher in Britain extends from mid-May to the end of July, a small number of pairs being double-brooded.

2. The average clutch size decreases from about 4.5 eggs at the end of May to less than 3 eggs by the end of July. A slightly, but significantly, higher average clutch size occurs in North England and Scotland than in the rest of England and Wales throughout the breeding season.

3. It is probable that the Spotted Flycatcher can only successfully rear a brood of five young in Britain when the conditions are very favourable.

4. No significant variation in nesting success with season has been detected.

5. The average incubation period is 13.2 days and the nestling period 13.4 days; this latter figure is about one day greater than that given in *The Handbook*.

6. The situation of nests is discussed briefly.

ACKNOWLEDGMENTS

The author would like to express his thanks to the Director of the Edward Grey Institute for access to the Whitaker records, to Mr. J. H. Owen who very generously made available a large amount of his unpublished data on the Spotted Flycatcher, and not least to members of the British Trust for Ornithology who have completed the Nest Record Cards for the Spotted Flycatcher and the Scientific Advisory Committee of The British Trust for Ornithology who made the cards available for consultation.

Thanks are also due to Mr. J. A. Gibb who read the manuscript and offered his most helpful criticism.

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SOME OBSERVATIONS ON QUAIL DURING THE BREEDING SEASON OF 1951.

BY

W. D. CAMPBELL.

LOCATION AND HABITAT

THE following observations on Quail (*Coturnix coturnix*) were made at Cholsey, near Wallingford, Berkshire, in the summer of 1951. The habitat was corn, with the exception of two large patches of mature red clover, and extended over some 150 acres of the S.E. face of a ridge, from 200 to 240 ft. above sea-level. The absence of hedges or fences, and the presence of a road and several tracks for farm vehicles intersecting or bounding the fields, did much to facilitate attempts to locate calling birds.

DATE OF ARRIVAL

In mid-June the farmer, who takes a sportsman's interest in his Partridges (*Perdix perdix*), flushed a pair of birds which puzzled him because he recognised that they were not young birds of this species; subsequently, no doubt because of his habitual daily rides over his land, accompanied by retrievers, he saw more Quail than any other observer, and thus became certain that the first two birds were of this species.

I myself had passed and returned through this area almost daily since early spring, usually between 4.30 and 7.00 a.m. G.M.T.—a very favourable time for hearing Quail—but I heard none until June 30th.

The shepherd, who had a flock folded on the clover, also first noted the call on this date.

[It is worthy of note that this man immediately realised that the sound was something new in his experience, although he had followed his calling in these fields for 30 years.]

NUMBERS

On July 3rd two separate males were calling, about a quarter of a mile apart. The shepherd stated that a third bird had by this time established itself in the clover where his sheep were. By July 12th four males were calling regularly from fairly definite territories, and calls were heard twice from a site so far removed from the others as to indicate the presence of a fifth bird. On July 13th and for some weeks subsequently, another male was calling at a lower site about 1 mile to the eastward.

CALLS

Male.—The well-known ventriloquial effect of the male call renders direction-finding by ear difficult, but on each of nine occasions when the proximity of the road or tracks made approach possible, I found that the usual series of "wet-my-lips" was invariably preceded by the nasal-guttural call.

The "rowow" of Naumann (*Handbook*, vol. v, p. 251), if the vowel sounds are as in English "how now," is a good rendering of this hoarse sound at the distance when it first becomes audible, but at close quarters there is more to be heard. The French version of Bailly (Moreau, *antea*, vol. xlv, p. 269) lacks the guttural effect which to my ear is characteristic. My rendering is "miaow-ch-wah"—the "miaow" somewhat leisurely, the "ch" a guttural aspirate, and the final "wah" very emphatic and abrupt.

Female.—R. E. Moreau kindly provided me with a call-pipe of French manufacture, procured in an Algerian bazaar. This consists essentially of a brass whistle with a leather concertina-type bellows. It produces a "peep" approximating in pitch to the highest "E" on the pianoforte keyboard.

Until August 7th my calling experiments had been based on the assumption that the female's disyllable must coincide with the last two notes of the male's trisyllable. (De Bout, quoted by Moreau,



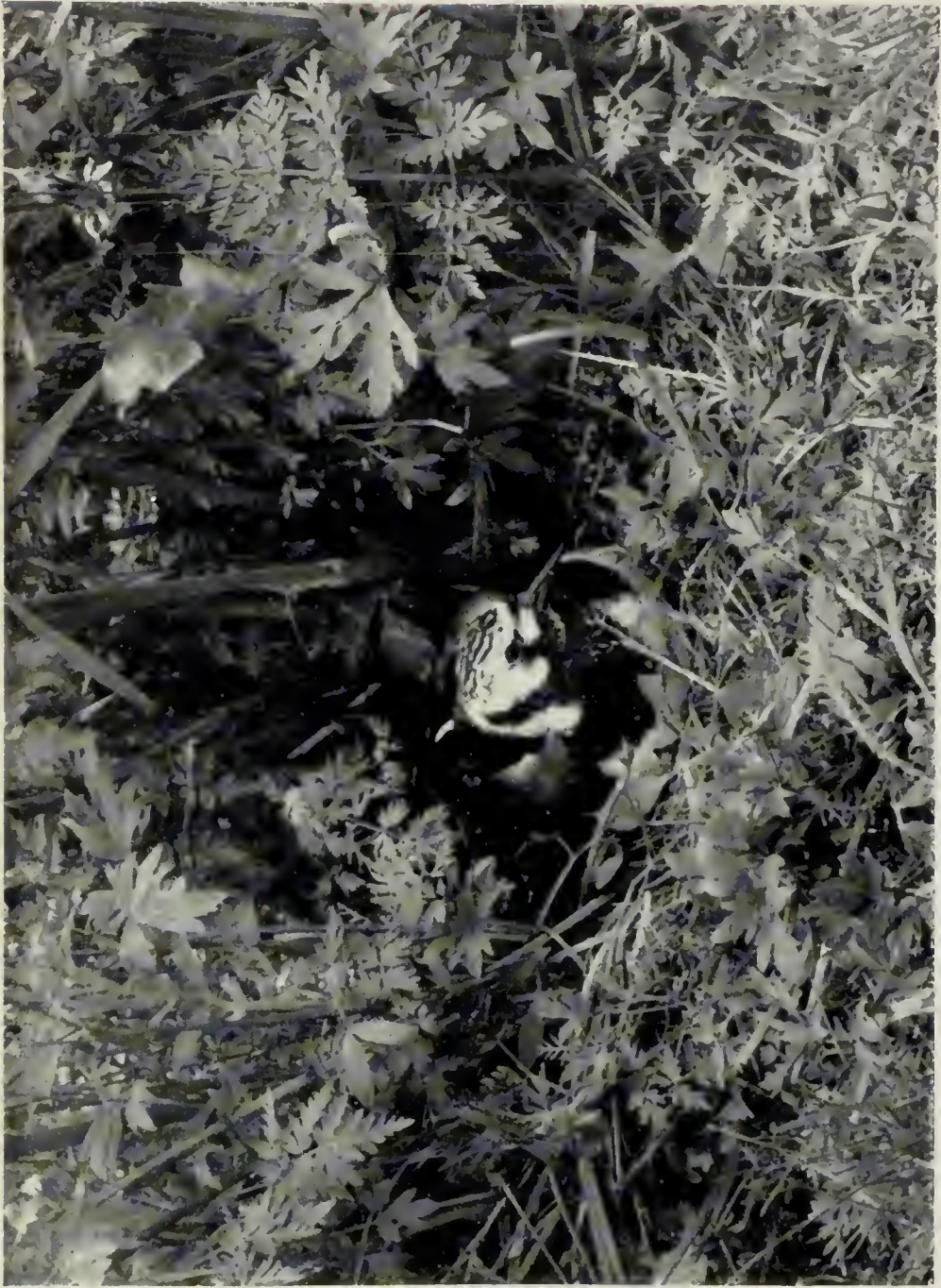
TURNSTONE (*Arenaria interpres*). ÖLAND. SWEDEN.
(Photographed by RALPH CHISLETT)



TURNSTONE (*Arenaria interpres*). ÖLAND. SWEDEN.
(Photographed by RALPH CHISLETT).



TURNSTONE (*Arenaria interpres*), NESTING IN THRIFT.
(Photographed by RALPH CHISLETT)



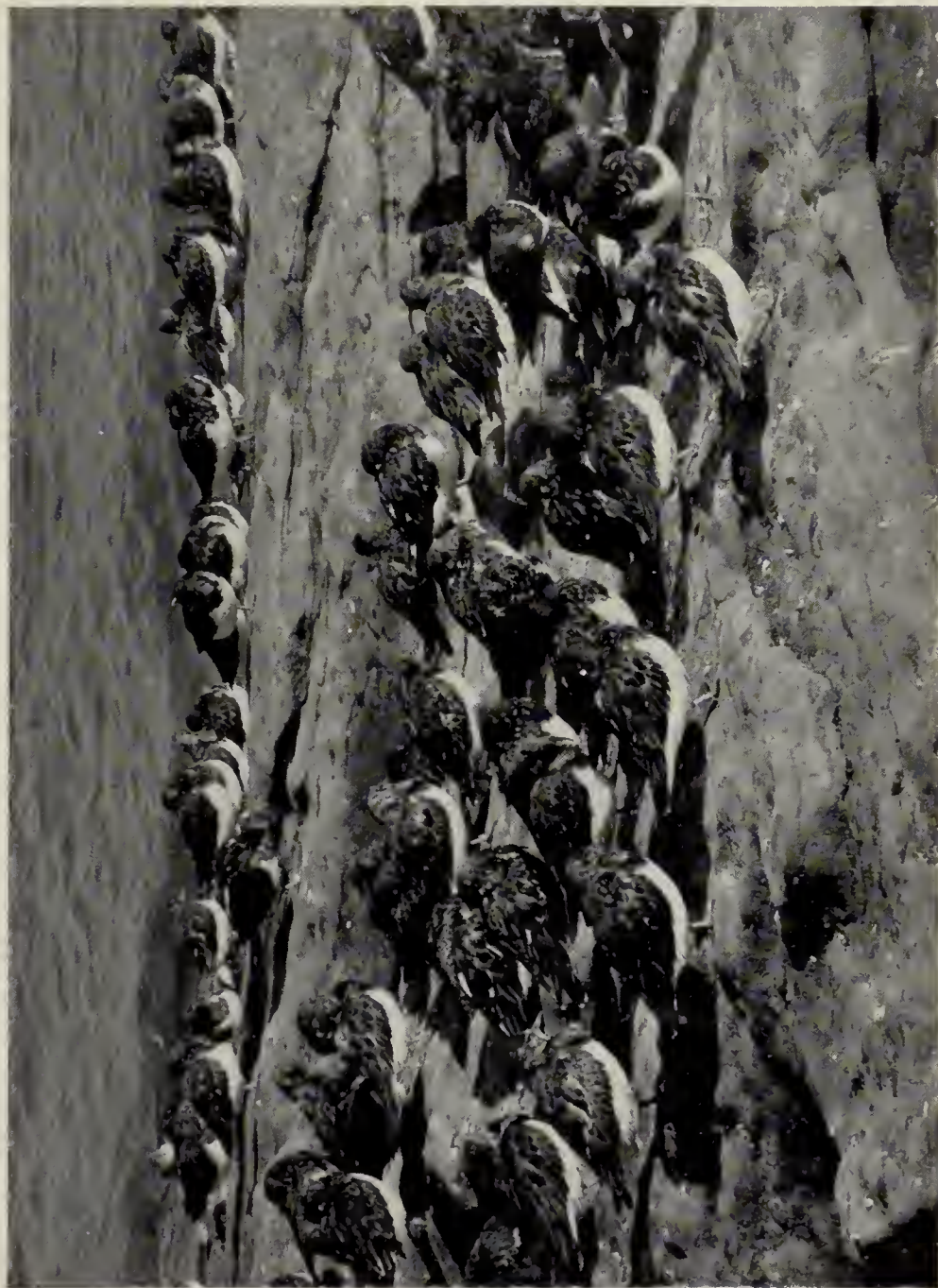
TURNSTONE (*Arenaria interpres*), NESTING ON SHORESIDE.
(Photographed by RALPH CHISLETT).



TURNSTONE (*Arenaria interpres*). PAIR AT NEST. RYBECKI PENINSULA, U.S.S.R.
(Photographed by Dr. F. N. H. MAIDMENT).



TURNSTONE (*Arenaria interpres*), IN AUGUST PLUMAGE. DEE ESTUARY, CHESHIRE.
(Photographed by GUY B. FARRAR).



TURNSTONE (*Arenaria interpres*). AT HIGH TIDE. HILBRE ISLAND, CHESHIRE.
(Photographed by ERIC HOSKING).



TURNSTONES (*Arenaria interpres*), WITH SOME REDSHANKS (*Tringa totanus*), AFTER THE
TURN OF THE TIDE. HILBRE ISLAND, CHESHIRE.

(Photographed by ERIC HOSKING).



QUAIL-PIPE FROM ALGERIA. ACTUAL SIZE.

antea, vol. xlv, p. 270). This produced no conclusive results. On August 7th, by which date calling was becoming very infrequent, I had been vainly making double calls of various rhythms, when I chanced on one which produced an immediate response. It was timed to coincide with the first and last syllables of "wet-my-lips" — "peep-(pause)-peep." At once there came from the corn near by a very urgent and excited "miaowchwah," repeated six or seven times, in perfect synchronization with my double call. The illusion that I myself was producing the sound by working the pipe-bellows was very strong, and suggested "a wheezy pumping" as an apt description of this call. As I continued to make my call the answering bird suddenly changed to a very distant normal trisyllable, but still in time with my calls. On the next day my calling produced the preliminary response repeated twice only, followed by a burst of normal calling, at first sounding fairly close, but suddenly becoming distant.

On August 10th, during a survey of the area from 4.30-6.30 a.m. G.M.T., no calling was heard. At 6.30 a.m. I tried the hypothetical female call, and at once received the "wet-my-lips" reply, again the "close" followed by the sudden "distant," effect. At 2 p.m. on the same day, but at a distinct territory, I obtained an exactly similar result. My impression on these two last dates is that the answering males were much deeper in the corn than was the bird on the first successful occasion; but since I had come to regard the audibility of the preliminary call as the only criterion of propinquity, the validity of this impression may be doubtful.

The performance of the male on August 7th certainly gives some support to Bailly's statement as to the increased use of the preliminary call by the male when near the calling female (Moreau, *antea*, vol. xlv, p. 269).

I was away from the district from August 11th-25th, but during this time no calling was heard by the shepherd, the farmer, or any of the farmworkers, all of whom were by this time very interested and co-operative. From August 26th I resumed using the call, and during the ensuing fortnight obtained no results, except that on four occasions a Partridge replied with an agitated covey-rallying call. This seems to support H. M. Stanford's description of the female Quail's call, quoted by Moreau (*antea*, vol. xlv, p. 270),

assuming that "a miniature edition of an English Partridge's call" is equivalent to the call of a juvenile of that species.

Further probable evidence as to the calling of a female came from the shepherd, who reported that the only calls which he heard for the last few days before chicks appeared were of "two blasts instead of the usual three."

BREEDING AND LENGTH OF STAY

The shepherd saw an adult with an uncertain number of clicks, probably 7 or 8, on August 10th.

The farmer flushed bevvies of 5 or 6 on at least two occasions in early September, and saw two birds together on several occasions throughout October. If, as both the shepherd and I suspect, nesting took place in one patch of clover, the clutch would almost certainly have been destroyed, for it was completely grazed and thoroughly trodden by penned sheep during July.

The last birds, two together, were seen on October 24th.

On October 4th a tractor-driver engaged in gathering up the loose heaps of straw left by the combine-harvester, saw a bird fluttering and entangled in the straw as it ascended the canvas, and a Quail emerged just in time to escape compression. R. E. Moreau informs me that the Egyptian Quail-netters used to set up small heaps of scrubby cover, into which birds which had overshot the net would run and hide. I imagine that in this case a heap of loose straw had been similarly used as a refuge by a bird startled from the stubble. If this assumption is correct, it seems probable that with the increase of mechanization the post-harvest operations may prove more dangerous to this species than the actual reaping.

SUMMARY

1. During the summer of 1951 a small concentration of Quail occurred, somewhat late in the season, near Cholsey, Berkshire.
2. The preliminary call of the male is discussed.
3. From the use of a call-pipe observations are made on
 - (a) The nature of the female's call.
 - (b) The male's answering calls.
 - (c) The reaction of the Partridge.
4. Evidence of breeding is given.
5. A potential danger arising from mechanized harvesting is mentioned.

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XXXIX. THE TURNSTONE.

Photographed by RALPH CHISLETT, GUY B. FARRAR, ERIC HOSKING
AND DR. F. N. H. MAIDMENT

(Plates 37-44).

THOUGH the Turnstone (*Arenaria interpres*) is more numerous on our coasts in spring and autumn, it is safe to say that there are some present in every month of the year. Individuals in the striking and handsome breeding plumage shown in Plates 37 to 41 may be seen even on the South coast in mid-June, and it is perhaps not surprising that rumours of nesting occur from time to time. A case in which there seems to have been strong circumstantial evidence is referred to on p. 181; a more recent one is reported from Cornwall (*Cornwall Bird-watching and Preservation Society, 20th Annual Report, 1950, p. 25*). So far, however, there is no proof that the species has bred in Britain, though it would not be surprising if it did so. Its breeding range includes islands in the Baltic, such as Öland where some of our plates were taken, and overlaps much of the range of Temminck's Stint (*Calidris temminckii*) which has attempted to nest in Britain and is of much rarer occurrence on passage. Plates 42 to 44, taken in the Dee estuary, Cheshire, give some indication of the large numbers of Turnstones which may occur at times of passage; they also show the more sombre, uniform plumage of autumn birds. It should be remembered that a high-tide refuge like Hilbre Island receives a remarkable concentration of birds gathered from a wide area; flocks on the feeding grounds are usually smaller.

J.D.W.

A CENSUS OF COMMON SANDPIPERS IN THE
SEDBERGH AREA, 1951.

BY

E. I. CUTHBERTSON, G. T. FOGGITT AND M. A. BELL

THE Common Sandpiper (*Actitis hypoleucos*) was chosen as the subject of a census in the Sedbergh area of Yorkshire for two reasons: (i) a distribution count of Common Sandpipers had been completed in 1939, and records existed from that year onwards; (ii) the Common Sandpiper stays near rivers and streams, making it an easy species to observe and a good subject for an accurate distribution count.

TOPOGRAPHY

The Common Sandpiper in this district breeds along the river

Lune and its tributaries, Rawthey, Dee and Clough, and along some of their tributaries. In this area it appeared to shun limestone areas and any stream where the fall was greater than 200 ft. per mile. Few, however, nested out of the valleys and their limit appeared to be 1,750 ft. This area is extremely mountainous and out of some 300 miles of river and beck c. 60 miles held sandpipers. The higher the hills, the fewer the pairs, but in the low river valleys the density was in many places high.

LOCAL MIGRATION IN THE BREEDING SEASON

At Killington reservoir, 400 ft. above the valley floor and $1\frac{1}{2}$ miles as the crow flies from the Lune, about four or five pairs nested. The numbers were never accurately counted owing to an influx of apparently non-breeding sandpipers. The numbers varied from day to day and possibly adult breeding sandpipers came in to feed. There may, however, have been one or two barren pairs resident there and, later in the season, early flying young. But wherever in the valleys a nest or young was in some way destroyed the adults left the district soon after. Thus the influx may have been due to birds which had had their nests destroyed.

HABITAT IN THE BREEDING SEASON

The Common Sandpiper nests along the banks of rivers and becks and on the shores of lakes and reservoirs. If there is a suitable island the nest will always be situated on it; otherwise it will be found on the grassy verges of shingle banks or in a clump of reeds. Once the nest was found 8 ft. up on a ledge of a small cliff. Where the river has eroded its bank the nest is often found half way up a sheer sandy bank in a suitable hollow. Usually it is concealed in a clump of vegetation. Nests are found at an altitude of over 1,000 ft. a.s.l., or low down in the valleys. Thickly vegetated banks are shunned, as are bare rocky banks; a mixture of the two seems to be preferred.

THE NEST

The nest itself is a small hollow lined with dead grasses and leaves. At the back it is completely concealed by thick vegetation, usually a clump of reeds or small shrubs, but once by a log and washed up debris and twice, when the nest was on a ledge of a small cliff, by sheer rock. The front is also camouflaged by a little vegetation, mostly reeds and grass. We found no exceptions to these rules.

TERRITORY

It was noted that sandpipers would always retire up or down stream at the approach of an observer. Then, after having been driven for a certain distance, they would return, either straight back along the stream or by making a detour away from the river. At other places, however, the birds bred so closely that four pairs would often freely intermingle.

INCUBATION, HATCHING AND HATCHING SUCCESS

Details are given in Table I of dates of the start of incubation and

of hatching in the three years, 1949, 1950 and 1951. The nests in question were visited at least once in three days.

TABLE I

Year	Average start of incubation	Earliest and latest dates of start of incubation	Average hatching date	Earliest and latest dates of hatching	No. of nests
1949	May 25	—*	June 15	—*	2
1950	May 26	May 19–June 1	June 16	June 9–22	4
1951	May 19	May 14–23	June 9	June 4–13	8

All years May 23 May 14–June 1 June 13 June 4–23 14

* Incubation in both nests started on the same day; both hatched on June 15

In Table II are given the details for hatching success. The data do not cover the period after the young left the nest, so the table does not indicate fledging success. Years for which data are inadequate or unreliable have been omitted.

TABLE II : CAUSES OF DESTRUCTION OF NESTS

Year	Floods	Nests destroyed by		Nests hatched	Total
		Crows	Unknown causes		
1937	—	2	—	3	5
1939	—	—	—	2	2
1943	—	—	1	—	1
1945	—	—	1	2	3
1949	—	—	—	3	3
1950	1	—	—	4	5
1951	—	—	1	10	11
All years	1	2	3	24	30
%	3½	6⅔	10	80	

CENSUS FIGURES

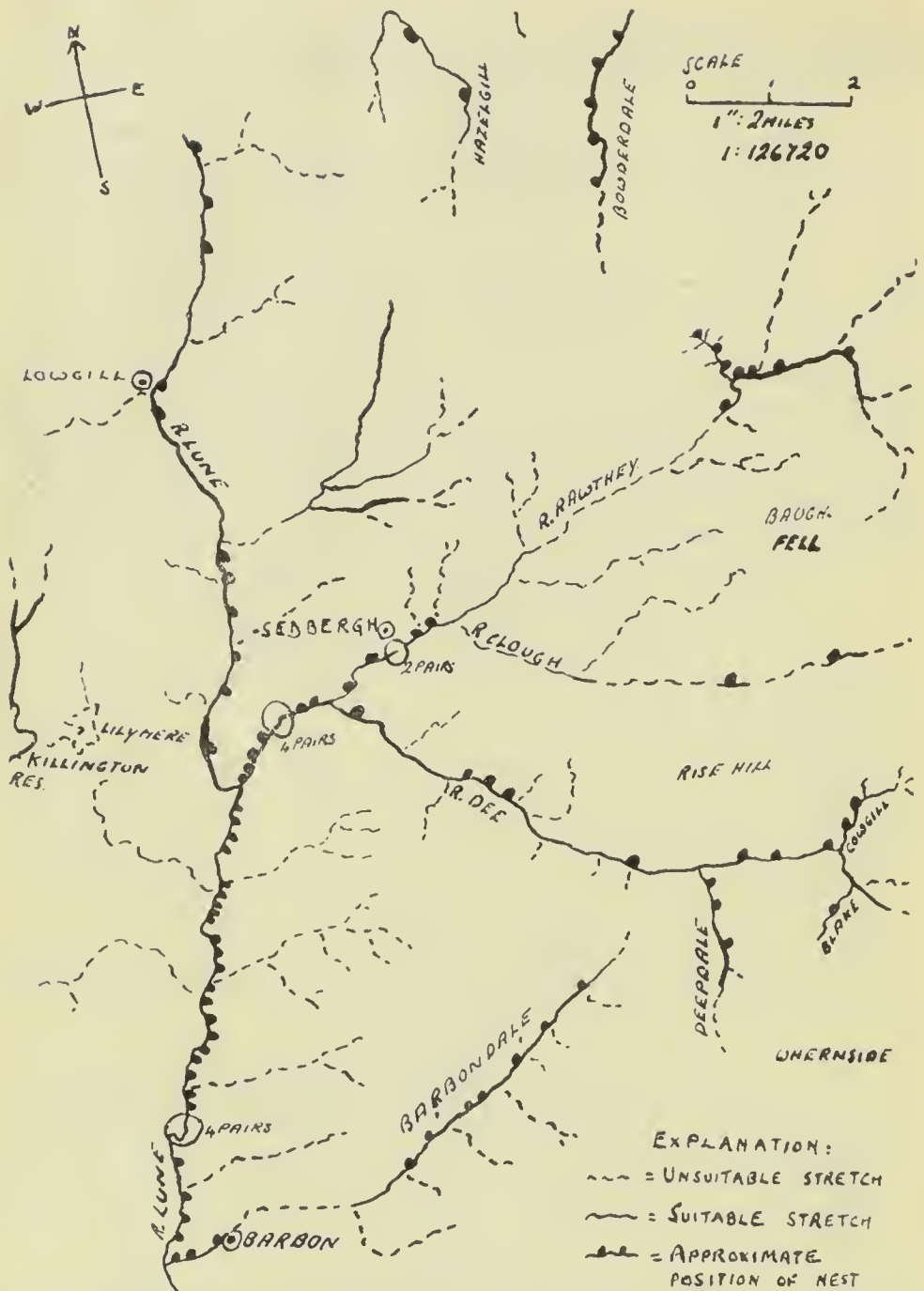
In Table III the results of the 1951 census are compared with the figures for the same stretches of river in 1939.

TABLE III

River		Pairs in 1939	Pairs in 1951	Increase/Decrease	Length of river surveyed
Rawthey...	...	10	16	+6	4½ miles
Lune ...	...	7	6	—1	3½ "
Dee ...	...	4	4	—	3½ "
Clough ...	...	2	—	—2	2 "
Total ...	...	23	26	+3	14 miles

In Table IV the results of the census made in 1951 are given in full. The position of each pair recorded is plotted on the accompanying map.

The census was carried out by a team of three members of the Sedbergh School Ornithological Society. The information compiled by the same team in 1949 and 1950 was also included as part of the census. The areas marked on the map as "unsuitable" are so marked either because the vegetation on either bank is so



dense as to be unsuitable or because the fall of water is greater than 200 ft. per mile; areas are also marked thus because the banks are too steep or occasionally too bare and rocky. The counts were made between May 1st and July 15th. Many stretches of river were covered three or more times, others further away were covered only twice and those furthest away only once. The latter are, however, few. The river levels were normal throughout the seasons. A heavy flood could have done great damage.

TABLE IV

River				No. of pairs	Mileage of river surveyed
Rawthey	...	...	...	22	13
Lune	...	...	...	40	13
Dee	...	...	...	11	10½
Clough	...	...	...	2	6
Barbondale	...	...	...	10	5½
Cautley Beck	...	...	...	3	1
Deepdale	...	...	...	3	1½
Cowgill Beck	...	...	...	2	2½
Blake Beck	...	...	...	1	2
Bowderdale	...	...	...	5	2½
Hazellgill	...	...	...	2	2
Total	...	...	...	101	60

THE NESTING OF A PAIR OF BLUE TITS.

BY

G. A. AND M. A. ARNOLD

INTRODUCTION

DURING 1951 we were able to study a pair of Blue Tits (*Parus cæruleus*) nesting in a garden at Wilnecote, north Warwickshire, and the following are some of the more outstanding observations.

Both birds had been trapped and colour-ringed in the winter. They were thought to be paired by February 3rd as they were almost invariably together from that date. Nest-site prospecting began on March 18th by the female perching on, and looking into, the entrances of nest-boxes. On April 7th at 13.15 G.M.T. the female was first seen to enter the chosen nest-box, followed a few seconds later by her mate; the male reappearing within five seconds and the female within a minute. The box was placed six feet high on a rustic pergola.

The area of "territory" roamed over was about 3¼ acres with no competition from rival pairs in adjoining land. Rural gardens were mainly flower-beds and vegetable plots with little fruit tree and shrub growth, and about 150 yards of hawthorn and privet hedging. Main feeding areas proved to be at the extremities of the range: chiefly in a half-acre slag-heap thicket, mostly of 20 foot black poplars, birch and beech; but also in two small apple orchards totalling another half-acre.

BUILDING THE NEST

On the morning of April 8th the male was pecking at the lower part of the hole from the outside whilst the female was inside the box. Eight times during the day the female entered and stayed for one to five minutes. The next day the pair started carrying out wood-chippings placed there three weeks earlier. More shavings were

taken away until April 11th when only a few fragments remained. Foundations of the nest appeared on April 13th and building continued until the 19th, entirely by the female, using the usual grass and moss vegetation. Up to May 7th neither bird visited the nest-box again and they seldom came into the garden. They returned on May 8th and, until the 11th, the female, and rarely the male, took in lining for the nest, mostly feathers no longer than one inch, with some rope and string strands plucked from clothes lines. Lining was added up to the day of laying of the third egg.

Hole-pecking was done almost always by the male, but was only noted three times from the inside. The female likewise pecked from both sides but on four occasions only. As this activity was performed whilst the nest foundations were in the course of construction, also during lining, and at no other time, it supports the contention (Gibb, 1950) that hole-pecking in tits is a form of display. When the female was a short distance from the nest it was frequently observed that the male, after a bout of pecking, would induce the female to pay attention to the nest.

LAYING

One egg was laid each day: the first on May 12th, and the last, the twelfth, on May 23rd. Invariably the egg was laid before 10.00 and most likely before 8.00. The earliest eggs were buried deep below the lining, and raised towards the top as the clutch neared completion.

LENGTH OF ACTIVE DAY

On May 12th the male began singing at 4.40 B.S.T. During the tending of the young the earliest feeding time was 4.30 and the latest 21.31 B.S.T., on June 17th when the female was absent for the first night.

ROOSTING

First roosting on the nest by the female was two or three days before the first egg was laid, and then she roosted nightly until the young were 11 days old. The male always roosted away from the nest.

On the day the first young hatched the female tended them to 19.59 before finally retiring and in the brood's first 11 days of life she did not enter to roost until about 20.30. The male was often around when his mate retired (*cf.* Colquhoun, 1942) and frequently took food in to her for a further 20 minutes.

INCUBATION

Incubation began about 11.00 B.S.T. on May 22nd with the penultimate egg.

Incubation was undertaken entirely by the female and after 13 days, on June 4th, the first egg hatched between 10.00 and noon.

The frequency distribution in Table 1 gives the periods the female spent sitting, which averaged 59 minutes. There is a surprisingly even spread from the 21-40 minute group to the 81-100 minute group with no clear peak at all. The periods the female spent

TABLE I. PERIOD SPENT ON AND OFF NEST

SPENT ON NEST			SPENT OFF NEST		
LENGTH	OF PERIODS	FEMALE	LENGTH	OF PERIODS	FEMALE
<i>Minutes</i>	<i>Number of Periods</i>		<i>Minutes</i>	<i>Number of Periods</i>	
1-20	8		1-2	2	
21-40	10		3-4	3	
41-60	10		5-6	25	
61-80	14		7-8	25	
81-100	12		9-10	15	
101-120	4		11-12	9	
			13-14	2	
Total number of			Total number of		
Periods ...	...	58	Periods ...	...	81
Average time	...	59 mins.	Average time	...	7.5 mins.

away from the eggs averaged $7\frac{1}{2}$ minutes. The male was not, at any time, in the nest-box for more than two or three minutes. Often he would alight close by and call off his mate, but just as often she emerged on her own initiative. Dividing the day into three the female's time on the nest differed slightly, viz., morning (9.00-noon) average 54 minutes; afternoon (noon-16.00), 64 minutes, and evening (16.00-20.00), 58 minutes. During incubation the average period on the nest from the 1st-4th days was 56 minutes; 5th-6th days, 61 minutes, and 9th-13th days, 59 minutes. Whichever way the periods off the nest are calculated under similar headings the result is consistently between seven and eight minutes.

BROODING THE YOUNG

Two eggs proved infertile; the remaining ten hatched over a period of three days, during which the female brooded much as usual for incubation. On the third day she was away from the nest a good deal and on the sixth day was feeding the brood as much as the male.

WING-SHIVERING

Throughout incubation the female begged food from her mate, but on the day all young hatched the male began wing-shivering. For the next two or three days he continued to pass food when begged. When the young were four days old and wing-shivering was mutual the male began ignoring the female and took in his own supply to the young even though she was close by.

FEEDING THE YOUNG

As the male delivered his load of caterpillars to the female to carry in, it could be seen that on about half the occasions only one larva was brought, otherwise two were exchanged, and twice he had three caterpillars to transfer.

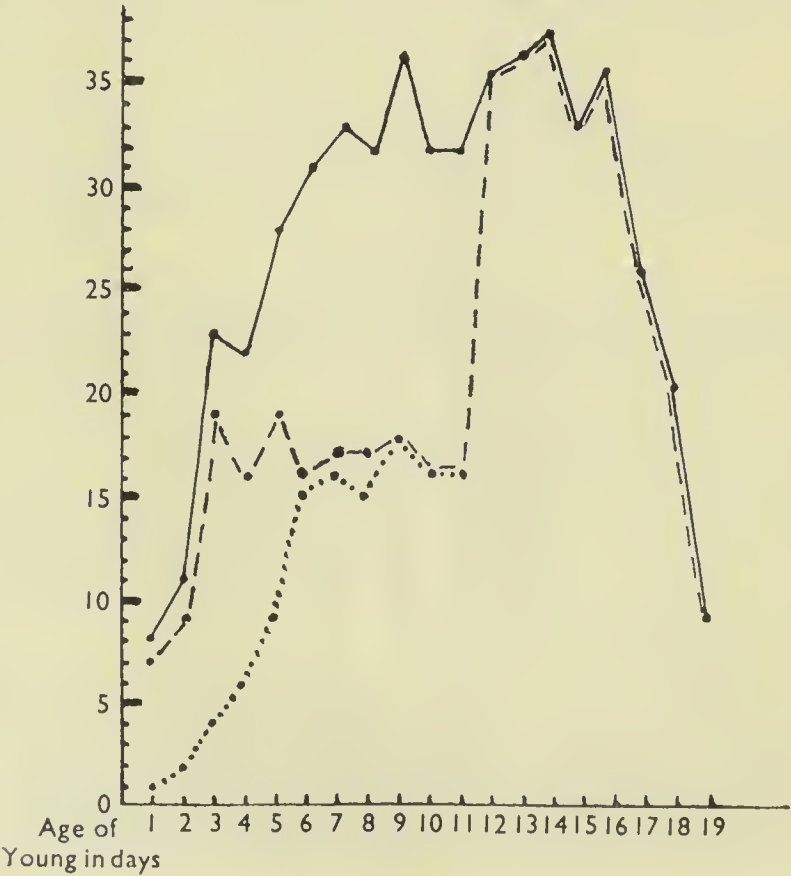
Table 2 depicts the hourly feeding variation to the young. Around mid-day on the young's 13th day the male achieved his highest rate of 49 visits in half-an-hour. These trips were with bread crumbs, taken from a neighbouring garden 15 yards from the nest, and were made directly after a heavy rain shower. The inclusion of this exceptional count tends to inflate this period, so that,

TABLE 2. FEEDING THE YOUNG
VARIATION IN FEEDS TO YOUNG

Visits per half-hour	9-11 a.m.	11-1 p.m.	1-3 p.m.	3-5 p.m.	5-7 p.m.	7-9 p.m.	All hours
1-5	2	6	5	6	1	3	23
6-10	10	1	10	5	5	3	34
11-15	8	10	13	9	7	6	53
16-20	6	8	8	8	8	3	41
21-25	2	5	2	1	10	7	27
26-30	—	1	—	—	—	1	2
31-35	—	0	—	—	—	2	2
36-40	—	0	—	—	—	—	0
41-45	—	0	—	—	—	—	0
46-50	—	1	—	—	—	—	1
Total half-hours counted	28	32	38	29	31	25	183
Average visits per half-hour	12.3	14.2	12.0	11.8	16.4	16.8	14.0

AVERAGE HOURLY FEEDS PER DAY TO YOUNG.

— Total feeds by the female --- by the male



in fact, there is no significant difference in the feeding rate from 9.00 to 17.00. There is an increase between 17.00 and 21.00.

In the graph it will be seen that the male did most feeding of the young during the first five days. From the 6th-11th days duties were equally shared. From then until the 19th day the male successfully accomplished the task alone. The female was last seen in mid-afternoon of the young's 11th day; she then held a beakful of feathers when leaving the nest and never returned.

The male's role in feeding the young depicted in the graph shows the increased effort of which an adult is capable in an emergency. The facts that the feeding rate dropped so markedly on the last few days, and that one of the ten young was found dead in the nest after the others had flown, both suggest he was exerting himself to a capacity which he could not maintain. It is unusual for the fall in the feeding rate to be so acute and yet sufficient to nourish the young properly. Gibb (*loc. cit.*) who has had similar experience with the Great Tit (*Parus major*) found such broods considerably underweight. In the 19½ days of feeding the young we made from 8-12 half-hour counts daily, but no counts were made prior to 9.00. On the 14th day the male averaged 37 visits per hour, this figure being concluded from 11 counts. With his active day at 15½ hours—4.30-20.00 B.S.T.—he alone performed between 550 and 600 visits to the nest with food. Observations from the 11th-17th day reveal that he was never away from the nest more than ten minutes at one time, except for roosting, and usually less than five minutes.

FOOD

Items of food picked out from a distance of 20 yards through binoculars and telescope consisted of over 2,000 ½ in.-1¼ in. length light green caterpillars (probably geometrid species); 47 visits with other species of larvæ and with greenfly; bread and other crumbs at least 250 times, these mainly fed during wet spells; six small flies: five beakfuls of walnut kernel and three of fat; two small light brown moths and a ½ in. piece of lettuce, taken into the box when the female was inside with the young. These figures give a percentage of approximately 85% green caterpillars, 12% crumbs, 2% other caterpillars, and 1% miscellaneous. Sipping of water from a bird-bath near by was seen only eight times in the male and he bathed once; the female only once was seen to drink.

NEST-SANITATION

First excrement was carried out 24 hours after the first young hatched. For the next three days the membranous sac was seen to be swallowed twice each by both parents. Average rate of carrying from the 3rd-17th day was five times per hour; as the brood clamoured for food at the entrance during the last two days before flying, the parent could seldom make his way into the nest-box. After the nine young left the nest—ten were colour-ringed on their 12th day, therefore one died in the last seven days—the nest

was covered with droppings. Up to the 11th day both parents took excrement 15-50 yards away, but the male later deposited it only one to four yards from the nest.

LEAVING THE NEST

To induce the young to leave the nest the male called with food at a distance of 10 or 20 yards, and eight young emerged from 15.30 to 16.10, each flying 5-15 yards to the ground amongst low but thick vegetation. Within an hour a very heavy thunderstorm began, and with little abatement lasted into the night. The ninth and last youngster left the nest at 18.15 during a temporary lull. One dead was later found deep inside the nest. As the male was severely hampered tending them in the conditions, mortality was probably high. One was found dead next morning, June 24th. Only one was seen later in company with the male, and the youngster was feeding completely independently just 21 days after leaving the nest.

We are indebted to John Gibb and R. A. O. Hickling for advice on the presentation of this paper.

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OBITUARY.

CECIL ROBERT VESEY STONEY (1878-1952)

C. V. STONEY, who died on February 19th, 1952, in the Isle of Man, was one of the finest field ornithologists ever produced by Ireland.

Stoney was a scholar of Shrewsbury and of Emanuel College, Cambridge, where he took first-class honours in classics. After teaching for some years in preparatory schools in England, he took over a school of his own in County Wicklow. Here he taught until his father's death when he became squire of the family property of Oakfield in County Donegal. In 1931 he settled in Berkshire where he set up a coaching establishment, before retiring to the Isle of Man at the end of the war. Although he wrote comparatively little, he had great influence on Irish ornithology and ornithologists. There was hardly a county in Ireland which Stoney had not visited and explored. Probably his most important find was the great colony of Black-necked Grebes which George R. Humphreys and he discovered in 1929. Working on the slenderest of clues, these two ornithologists succeeded in locating this remarkable colony of birds in the reed-beds of a lough in the Irish midlands.

Stoney, H. T. Malcomson, G. R. Humphreys and C. J. Carroll, also discovered large colonies of Roscate Terns breeding on islands from which they had probably been absent for many years. On one of their expeditions, Malcomson and he found the only erythristic

Roseate Tern's egg ever found in Britain. He visited and studied what was then the large colony of Red-necked Phalaropes in the estuarine marshes of County Mayo. He found at least one nest of Hen-Harriers in Connemara, and watched one of the last of the Irish pairs of Golden Eagle. I shall also always remember how he described to me what was, in his opinion, a pair of nesting Turnstone on a small and remote island off the coast of north-west Ireland. Stoney always believed that had not a storm blown up, he would have been able to establish the first British breeding record of this fascinating species.

Stoney belonged to a generation of superlative nest-hunters, men of skill and might in the field, who lived hard and to whom personal discomfort meant little. Gilroy, Macomb and Edgar Chance, Walpole-Bond, O. R. Owen and Arthur Whitaker were all of Stoney's generation. Each of these men had remarkable gifts. Stoney, certainly not least among them, was possibly, indeed, *primus inter pares*. Few equalled his all-round skill in the field; none surpassed him in energy, determination, and ability to analyse and assess a bird's behaviour at the nest. He had the gift of anticipation and timing possessed by all great games players. I myself have watched him move in such a way that a cock Wood-Lark called its mate from her nest and then, such was his intuitive power, induce the cock bird to chivvy back the hen almost as if he had commanded it!

Although Stoney lived much of his life in Ireland, he also visited practically every haunt of rare birds in the British Isles. He revelled and excelled in tackling the most difficult quarry. Along with Gilroy and Macomb Chance, he was one of the first who had much success in finding Greenshanks' nests in the Highlands of Scotland. His exceptionally quick eyesight and keen hearing helped him to follow small birds with uncanny skill for long distances. This enabled him to track down many Siskins to their nests in the great demesnes of Wicklow and Donegal. Those who have worked with him are never likely to forget the keenness and persistence with which he went about his tasks in the field. Whether he was after Hobbies or Dartford Warblers on southern heaths or downs, Bittern, Bearded Tit or Harrier in Broadland, or Eagle, Dotterel or Greenshank in the Highlands, Stoney was always the same—completely confident and almost invariably successful.

He belonged to an age in which almost all the great ornithologists collected, or had collected, eggs. The hunting-instinct was strong in him, but, had he been the child of a later generation, his gifts would have enabled him to become a leading student of the breeding-biology of birds.

He had the most delightful sense of humour, puckish wit, buoyant enthusiasm, and the gift of teaching and inspiring young men, making them devotees for life. It will be long before we see his like again, and the world of ornithology is the poorer for his passing.

D. N.-T.

REVIEWS.

The Study of Instinct. By N. Tinbergen. (Oxford U.P., 1951. 25s.).

Field observers have long felt the need of an authoritative, condensed summing up of the vast but fragmentary and often contradictory mass of fact and theory which has been accumulating about animal behaviour in recent years. All serious students of bird habits must be indebted to Dr. Tinbergen for having produced a guide to the subject so much better than could reasonably have been expected in view of its rapid and confusing development up to the present moment. One hardly knows whether to admire most the profound grasp and easy exposition of the broad relationships between physiology, psychology, ethology ("the objective study of behaviour"), ecology, sociology and taxonomy, or the clear, concrete language, dissecting and criticising the technicalities without ever losing sight of the living creatures behind them, and without ever becoming enslaved to jargon. The illustration of the text with no less than 130 diagrams adds greatly to the ease and enjoyment of following it, and the publishers have achieved a standard of production worthy of the high importance of the work, which observers of bird behaviour will no doubt be consulting pretty frequently for years to come.

While the subject-matter is drawn from the entire animal world the author's ornithological experience ensures that birds receive fully their fair share of attention, and the comparisons with behaviour of invertebrates, fishes and mammals (not excluding man) add considerably to the value of the work and to the solidity of its foundations, as also does its comprehensive use of European and American studies unknown to most students of bird behaviour in this country. Originating as a series of lectures delivered in New York in 1947 the book has become a major contribution to international co-operation in the science of animal behaviour and particularly in the organization of its problems into a coherent whole. So far as it can be summarized in a few sentences the author's presentation stresses the existence in animals of a vast and highly integrated range of nervous mechanisms of different types and levels which are hierarchically grouped in a number of "instincts," actuated by a series of priming, releasing and directing impulses from without and within, and responding to these impulses through the removal of one or more "blocks", thus enabling the performance of co-ordinated movements which contribute to the maintenance of the individual and the species. On the whole the simplest, most rigid and therefore most easily studied of these processes are the "consummatory acts" such as eating, escape or sleep in which the impulses are eventually discharged, in a more or less stereotyped fashion, through immensely intricate co-ordinated signals to the muscles and the motor units which are the slaves of the entire hierarchy. The next easiest point of study is the potential capacity of the animal to receive through its senses messages of sight, sound and so forth, and the problem of ascertaining how much of this vast potential field of excitation actually plays any part in obtaining responses. It is known for instance that bats not only hear but respond to sounds at least as high as 40,000 cycles per second, roughly three times as high as in man, while certain owls can hunt successfully by light of between one-tenth and one-hundredth of the intensity needed for human vision, although it is still at least doubtful whether they can see infra-red light. Yet with all these rich possibilities animals are apt to select and rely upon a remarkably limited range of sign stimuli, and to remain blind and deaf to all others. The author's own study of the importance for Herring-Gull chicks of the red mark on the bill of the parent is a good illustration. Adult Herring-Gulls can see and hear well enough to pick out their mates in a flock 30 yards away, yet they will fail to recognise and brood their own eggs, however distinctively marked, if they are moved a few inches.

The sound of a chick in distress may produce immediate response while the sight of it without the sound appears to mean nothing. Often it is some conjunction of landmarks or actions or characteristics of shape and colour which gets the response; one of the most curious and interesting experimental results is that a wide variety of models of birds of prey overhead release escape

reactions provided they are moved in the direction which gives a "short-necked" appearance; if the direction is reversed so that the object appears short-tailed but long-necked it receives no response. In some cases, especially in courtship, it has been possible to work out long "reaction chains" of consequential moves on the part of two or more animals, and study of releasers (or "social releasers" as the author has more accurately termed them) has shown how closely and economically they are adjusted to the giving by an animal of just the sign stimulus which is needed to touch off the corresponding response in others of its own kind.

The greatest difficulty is to trace what takes place between the acceptance of a message from outside and the execution of the appropriate response, and above all to explain the initiation of action in the apparent absence of any outside stimulus. Some light has been thrown even on this mysterious hinterland of animal mind by observing the displacement activities which occur when the creature is torn between two courses of action (such as fighting or escape) and when the thwarted impulse as it were "sparks over" on to some other and irrelevant track, such as preening, digging or picking up nest-material. Another significant revelation is the "explosion" of apparently causeless "vacuum activities" when there is a strong internal drive deprived by some unusual or artificial circumstance of its normal releasing stimulus, as when a captive Starling goes through the motions of catching an imaginary insect or young artificially reared Ptarmigan broods, which had never known the natural release of their escape reactions through the mother's alarm call, began showing frantic flight responses on the smallest disturbance or on none.

The only criticism which the present reviewer would offer is on the interpretation of the close massing of Starling flocks in the presence of a bird of prey as being an adaptation to deter high-speed stoops by Peregrine Falcons, owing to their fear of the effects of collisions. If this is a correct interpretation of the origin it certainly cannot explain the probably more frequent aerial manoeuvres performed between flocks of Starlings and Sparrow-Hawks over many roosts in this country, in which the Starlings at times follow the hawk rather than the other way round, and excellent opportunities for leisurely capture are given but are not seized. Possibly further study may bring to light some alternative, or perhaps additional, interpretation.

Dr. Tinbergen skilfully combines a survey of the contributions of others with a valuable discussion and provisional synthesis on his own part, in which field observers will welcome the emphasis on preparatory study of the entire behaviour pattern as the only safeguard against mistaken interpretations of particular experiments and observations. In the light of his discussion the crude approaches fashionable a few years ago are seen to be fully as distorted as old-fashioned anthropomorphism, although that term is itself open to objection, now that the behaviour of man himself is becoming recognised to be something very different from what the anthropomorphists used to assume it was.

E.M.N.

LETTERS.

REGISTRATION OF COLOUR-MARKING SCHEMES

To the Editors of BRITISH BIRDS

SIRS.—The increasing use of various types of colour-marking for the field recognition of birds must lead to confusion between individual experiments unless an authoritative central register can be compiled. The Scientific Advisory Committee of the British Trust for Ornithology therefore invites all ornithologists who are running colour-marking experiments with rings, dyes,

or in any other form, to file details of the marks used on a special schedule which I shall be pleased to send out on request.

Colour-marking schemes fall broadly into two groups :

I. Studies of population, dispersal and migration in mobile species, where a single colour is used to indicate the place of origin or the age when marked.

II. Detailed population and behaviour studies, usually of sedentary species, in which combinations of colours are used to identify individual birds.

It is obviously important that confusion in group I studies should be avoided and it is hoped, by means of the proposed register, that the B.T.O. office can serve as a clearing-house for information on all such schemes in the British Isles.

But it is also important that workers engaged in group II studies in the same neighbourhood should be aware of each other's existence, and so it is hoped that those who are running schemes, even on a small scale in their own gardens, will co-operate as well by asking for and filling in a schedule.

2, King Edward Street,
Oxford.

BRUCE CAMPBELL,
Secretary B.T.O.

THE LAND OF THE LOON.

To the Editors of BRITISH BIRDS.

SIRS,—In my recent book, *The Land of the Loon* and in Mr. Nicholson's review of it (*antea*, vol. xlv, p. 79) reference was made to the nesting of the Knot (*Calidris canutus*) in Iceland. Although permission to report this record was obtained from its discoverer, Mr. Adam Watson, it appears (*Ibis* 94; p. 373) that Mr. Watson has now been persuaded that the bird was not a Knot, but a Purple Sandpiper (*Calidris maritima*). It seems desirable therefore to correct this error at the earliest opportunity. G. K. YEATES.

[Since this reference appeared we have learned for the first time that the late Editor of *British Birds*, B. W. Tucker, had personally considered the evidence in this case and had come to the same conclusion. We take this opportunity of calling attention to the general difficulty of checking here the validity of sight identifications claimed for other countries. While the Editors will take all reasonable care, it must be understood that the responsibility for determining the eligibility of such records for inclusion in other countries' lists rests elsewhere and that the Editors are not in a position always to examine the evidence in such cases exhaustively. Even within the British Isles, reference in reviews in *British Birds* to published records of rarities should not be taken to imply that the Editors have scrutinised and accepted the evidence behind the statement unless the review says so.]

The review of *The Land of the Loon* also contained criticisms of the reproduction of the photographs which call for correction, as subsequent careful examination has shown that the review copy on which these strictures were based was a defective one, and we therefore wish unreservedly to withdraw them. The review itself mentioned the high reputation which the publishers, *Country Life Ltd.*, have won by their achievements in the reproduction of nature photographs, and, in the circumstances which have been brought to our attention, we would not think it right to leave on the record anything which might detract from that reputation.—EDS.]

BOOKS RECEIVED.

Birds as Individuals. By Len Howard. (Collins. 10s. 6d.).

Three studies in bird character. By Lord William Percy. (Country Life. 21s.)

Bird-watchers' Delight. By John Warham (Country Life. 18s.)

The Birds of the Malay Peninsula, Singapore and Penang. By A. G. Glenister. (O.U.P. 35s.)

Bird Recognition, 2. By James Fisher (Pelican Books. 3s. 6d.)



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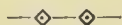
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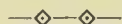
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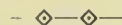
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EDITORIAL.

JUST a year ago at the time of writing these words the first issue of *British Birds* to be produced by the new Editorial Board went to press, opening with an Editorial in which a number of aims and objects were stated. Some of these have been fulfilled, at least to the satisfaction of the Editors, but others remain to be accomplished. Revised arrangements for the verification and publication of sight-records of rare birds have been worked out with the co-operation of those concerned and have been put into effect as explained in our January issue (*antea*, pp. 1-2). A number of valuable papers have been obtained and have been published, so far as possible at the seasons when they are of most interest to readers, and in some cases within a few weeks of being written. The principal outstanding problem here is to secure an even broader spread of subjects treated, and to avoid too much tendency for certain topics to monopolize an undue share of the available space.

In the case of Notes some reduction in arrears has been achieved by the methods indicated in last year's Editorial, although in response to appeals from several readers we have generally avoided the use of smaller type, and the adoption of a different style of heading has enabled space to be saved. Nevertheless it cannot be claimed that the position about Notes is even yet satisfactory, since the average wait for publication remains too long.

Thanks to the continued co-operation of many expert bird photographers and several talented artists the number and range of illustrations has been maintained at a satisfactory level. In the reviewing of publications we have found much more difficulty, and it has not so far been practicable to complete the Supplement covering recent literature which we stated among our aims last year. On the other hand the very large number of local reports in respect of 1950 have been reviewed in a body in recent issues, although certain of them were only published as we were going to press. It has also proved even more difficult than was expected to revert to regular publication on the 1st of each month, although this has been achieved for certain issues and others have appeared without much delay.

In our efforts to bring about further improvements we hope to have the goodwill and help of our contributors and readers. We are glad to know that despite the very difficult times the circulation has been well maintained, but nothing could assist more to improve *British Birds* than a substantial increase in circulation to afford some margin over increasing costs, and every extra reader helps in this way.

Finally, it is with the utmost regret that we have to announce the impending retirement from the Editorial Board of J. D. Wood, who is taking up a post at Geneva which makes it impossible for him to continue to serve. We are sure that all our readers will join with us in paying tribute to the great contribution which he has made to *British Birds* during one of the most difficult periods of its existence, and to the pleasant and efficient manner in which he has kept all concerned with its preparation and production in touch. He has not spared himself, and he has certainly left his mark.

We are glad to announce that we have secured the services as his successor of I. J. Ferguson-Lees, who has been for some time a contributor of field notes and a very active field ornithologist. We are confident that our contributors and readers will extend him a welcome and will support him in assuming his new burdens. From the appearance of this issue all editorial correspondence should be addressed to: Mr. I. J. Ferguson-Lees, Fordlands, Crowhurst, Sussex.

THE BREEDING BEHAVIOUR OF THE SWIFT.

BY

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(1) INTRODUCTION.

WE started to study the breeding biology of the Swift (*Apus apus*) in the summer of 1946, thinking that little was known of this remarkable bird. In Switzerland, however, Weitnauer (1947) had a long-term study of the species in preparation, and a shorter paper by Cutcliffe (1951) has now appeared in this country. Our first observations were made on pairs nesting in holes in thatched

roofs in villages near Oxford. Stimulated by a visit to Weitnauer in the autumn of 1946, we decided to try to induce the birds to breed in nest-boxes. Swifts have nested for many years in the ventilators of the tower of the University Museum in Oxford (hereafter referred to as "the Tower"). In 1948, helped by a grant from Mrs. J. B. Priestley, we had platforms erected inside the Tower, and the ventilators were replaced by nest-boxes, to which glass backs were fitted in 1949. The observer can now sit in semi-darkness a few inches from the birds, watching them against the light from their entrance holes without causing them any disturbance. In this paper we describe the behaviour of the birds in their holes. Aerial behaviour is not considered except where necessary for interpreting behaviour at the nest, and the numerical aspects of breeding biology have been treated elsewhere (Lack and Lack, 1951). We are greatly indebted to R. E. Moreau for his extensive criticisms of this paper in manuscript.

The Tower has a steeply sloping roof with 10 ventilators on each of its four sides. Buildings lower than the Tower adjoin it on three sides, the east being clearer than the north or south, while the west side is open. Swifts seem to prefer a clear "run-in" to the nests, and this is probably why the west is used more than the other sides. Of our breeding records during four years, 27 have been on the west, 20 on the east, 15 on the south and 13 on the north side of the Tower.

Most adult Swifts show little fear in their boxes, presumably owing to lack of natural enemies at the nest. There is, however, great individual variation. Some were extremely tame from the start and were not at all disturbed when, in our weighing experiments, we removed and later replaced their eggs or young under them. Others at first left the box if a hand was inserted, but became tame through repeated handling. Some fiercely attacked an inserted hand with their claws, and displayed (see later) if they heard us outside the box or saw an object near the glass. A few birds, on the other hand, always left when a hand was placed in the box, and later became shyer, not tamer, leaving if they merely heard a slight noise near the box.

Some of the Tower adults became so used to being handled that, near the end of the 1948 breeding season, we were able to place rings on their legs in the boxes without causing them any appreciable disturbance. When, however, we took a few of the adults out of the boxes for ringing, several of them deserted their nests. This came as a great surprise, both in view of their previous tameness, and because we did not think that we had caused any desertions in 1946 and 1947, when we caught the adults on nests in thatched roofs by inserting a hand from outside. (Actually a few had deserted, but we had not realised that we were the cause.) Acting on a suggestion from Weitnauer, we later caught some of the Tower birds and, instead of replacing them

in their boxes, released them from a window. Fewer deserted, but some still did so. We therefore gave up catching and ringing adult Swifts, and would urge other ringers to do the same. We may add that, in Sweden, Magnusson and Svärdson (1948) found that a rather high proportion of the breeding Swifts deserted when caught at their nests from outside for ringing.

(2) OCCUPATION OF BOXES.

In 1948, 16 pairs of Swifts laid eggs in the Tower boxes; the non-breeders were not counted. In 1949, 19 pairs laid eggs and 7 more boxes were occupied for at least part of the season by birds which did not lay eggs, the largest number of adults present on one day being 45. In both 1950 and 1951, 20 pairs laid eggs and about 45 adults were present in all. The latter total cannot be given exactly, as some of the non-breeders occupied boxes for only a few days or weeks, and some possibly changed from one box to another in the Tower. Most of the non-breeders were doubtless one-year-old birds. The latter were found by Weitnauer (1947) to occupy nest-sites and to form pairs, but not normally to breed, though one first-year male bred with an older female. Likewise Arn (1945) found that most Alpine Swifts (*Apus melba*) did not breed until their second year, though two individuals did so in their first year.

Weitnauer (1947) found that Common Swifts tended to return to the same nest-sites in successive years and that, probably for this reason, the same pairs tended to breed together in successive years. As we gave up catching the adult Swifts, we cannot assess the extent to which they were faithful to their nest-sites or to each other. Some individuals returned to the same nest-site and the same mate, but others changed, perhaps due to our disturbing them.

(3) ARRIVAL IN SPRING.

The arrival of the adults in spring was recorded by inspecting the boxes each evening when the birds came in for the night. In 1949, the first two adults appeared on May 5th and most came May 11th-27th. In 1950, the first appeared on May 1st and most came May 4th-17th, decidedly earlier than in 1949. In both years the colony assembled gradually, there being 2 to 5 newcomers each day. The biggest arrivals were of 10 on May 10th, 1949, and of 7 on May 4th, 1950. In 1951, the pattern of arrival was rather different. The first two came on May 1st and 13 others had arrived by May 6th. The next newcomer did not appear until May 15th, and the rest came between then and June 8th, between 2 and 5 arriving each day. There was thus a gap of 9 days with no arrivals, presumably due to a hold-up on the migration route; H. G. Hurrell (*in litt.*) found a similar hold-up in arrivals on the coast in 1951.

In several cases, particularly in 1951, a nest-box was frequented by one bird or a pair during the day, but was not used for roosting at night until several days later. It is not known where such birds roosted meanwhile. In several boxes, also, roosting was rather intermittent at first, a bird appearing one night, not the next, and so on, but this occurred chiefly with single birds, before the mate arrived.

In about a quarter of the observed pairs, the two members arrived on the same day. This happened with 7 out of 19 pairs in 1949, 2 out of 20 in 1950 and 5 out of 20 in 1951. In the rest, one bird arrived 1 to 10 days after its mate, while in the exceptional hold-up of 1951, one arrived 20 days and another 21 days after its mate. In view of these facts, it seems most unlikely that the pair stay together in their winter quarters and migrate north together in spring. Re-matings are presumably due to a tendency for both birds to return to the nest-site occupied in the previous year. Non-breeders, i.e. those pairs which did not lay eggs, arrived concurrently with the pairs that later bred.

(4) ROOSTING.

Except occasionally in the first few days after their arrival, each pair roosted in its box regularly each night throughout the breeding season. Very rarely, a bird returned so late in the evening that it failed to enter its nest-hole in the dusk, and we do not know where such individuals eventually spent the night. Once or twice a non-breeding bird, or a pair, disturbed and put out of their box at roosting time, returned to roost in another box, but we did not find this in the breeding pairs. In August, 1951, also, one non-breeding bird alternated irregularly, both for roosting and on its daytime visits, between two adjacent boxes, one of which was empty and the other regularly occupied by another individual. On only one occasion, in August, 1951, have we found three individuals roosting in the same box, the strange bird presumably being a passing migrant. The trio was not disturbed and only two birds were roosting there on subsequent nights. In May, 1951, one bird, presumably a stranger, came to roost at dusk clinging outside the Tower near one of the nest-holes, but we do not know whether it stayed the night.

The roosting pair sit with their heads facing inwards, often side by side, but particularly in cold weather with one on top of the other. We agree with Weitnauer (1947) that Swifts do not enter or leave the nest-holes during the night. The famous dusk ascents, which Weitnauer has shown are carried out by the first-year birds, are not considered in this paper. We saw them in various parts of Oxford. When one occurred on June 8th, 1949, about a mile from the Tower, none of the Tower birds, breeders or non-breeders, took part.

The Swift is a late riser by avian standards, and it comes out much later and retires much earlier in bad than good weather. In early May, 1951, when 8 individuals had arrived in the upper part of the Tower, it was found that the order in which they came in to roost was nearly, though not quite, the same on each of nine consecutive evenings. Certain individuals were always among the first and others always among the last to arrive. One bird regularly came in, stayed for a few minutes, and then went out again for a few minutes, before finally coming in for the night. In August, 1951, those parents feeding chicks stayed out much later than those without young. Rising and roosting times have recently been studied quantitatively by v. Haartman (1949) and Scheer (1949).

(5) BEHAVIOUR IN BOXES BY DAY.

The Swift usually enters its hole by a straight flight with a short rise at the end, alighting on the rim of the hole and immediately running in. With a wind force of 3 or more, or in fading light at dusk, a bird sometimes appears to miss the entrance hole; it then drops off and tries again. On a dark evening one individual actually made 20 consecutive attempts to enter its hole and then gave it up. During the day, several individuals often arrive almost simultaneously at their boxes. This is particularly common when they are feeding young, and suggests that they travel and feed in small groups.

Both the breeding and non-breeding adults visit the boxes regularly during the daytime in fine weather, the most favoured times being around 0730 and 1800 hours, and the least popular between 1200 and 1600 hours. On these visits they often stay inside for less than five minutes but sometimes for periods of an hour or more. (When eggs or young are present, the frequency of visits of course increases greatly.)

In rain, the Swifts often take shelter in the boxes, and in continuous heavy rain they may stay in for much of the day. During a watch from 0800 to 1800 hours on June 26th, 1951, when the weather was cold, windy and almost continuously wet, the two members of a non-breeding pair spent respectively only 6 and 12 (out of 600) minutes outside. The pairs with young, however, spent part of the day seeking food.

In August, 1951, on the Berkshire Downs, we saw several Swifts flying in front of and away from an approaching heavy thunderstorm. Swifts regularly dodge local storms in this way, and we have seen parents coming in to feed their young a few minutes after a heavy rainstorm had passed, but with their feathers quite dry. We have also seen Swifts flying through heavy rain, and arriving in their boxes very wet. During a watch in the Tower on July 17th, 1950, a sudden severe rain-squall brought

seven adults into the Tower at once, presumably because they were feeding close by. The many other adults did not come in at that time.

In very cold weather, the pair sit close together or on top of each other in the box, with hunched bodies and ruffled feathers. At 1500 hours on May 8th, 1950, in cold rainy weather, we found three birds huddled together in a box. The third bird remained at least an hour, but had gone by roosting time. There was scarcely any excitement, low clucks and occasional low screams, and a little subdued preening, though on every other occasion (except the roosting incident already mentioned) three birds in a box meant severe fighting. In really cold weather, Swifts have a remarkable habit of congregating in clusters on walls (see Lack, 1951), and the above was possibly an incipient case of this kind.

(6) "BANGERS".

In an aerial display, here called "banging", Swifts fly up to the nest-holes of other individuals and brush or bang against them, apparently with the wings, and then fly on. Sometimes a lone bird flies up in this way to several different nest-holes in succession, or to the same hole repeatedly, and sometimes a small party follow each other up to the same hole, then passing on to another hole. We have also had a banger follow up a parent returning to its nest. The bangers are usually silent and their flight is rather leisurely. Usually the banger just touches the hole and immediately flies on, sometimes it comes up to the hole and turns away without touching it at all, and occasionally it alights at the entrance hole and looks in. Still more occasionally, the stranger may actually enter a hole, as described later. "Banging" is quite distinct from the missed attempts at entrance by the parent birds described in the previous paragraph, though it may sound similar when heard inside the Tower. Banging occurs throughout the breeding season, and at any time of day, being especially common around 0800 hours and infrequent in the afternoon. It is restricted to good weather with little or no wind, and is particularly noticeable on the first fine day after a spell of bad weather. The significance of this behaviour is unknown. Possibly it is initiated by non-breeders seeking nest-sites. One of us has seen similar display, with follow-my-leader up to the nest-holes, in the shearwater *Puffinus l'herminieri subalaris* in the late afternoons along the cliffs in the Galapagos Islands.

When a banger or a banging party is going the rounds, the breeding adults often return and enter their boxes. They then sit looking out of the entrance holes, which makes their white throats prominent, and scream violently as the bangers pass by. If both parents have returned, they scream in duet, one giving a higher note than the other. If a single parent is present and sitting on the eggs or young, it sometimes ignores the banging,

but more often it screams, sometimes without leaving the eggs, while at other times it leaves the nest and walks to the entrance hole, perhaps with incipient threat display. One bird, disturbed by a banger while building, advanced still carrying a leaf in its beak, but returned after a minute to continue building. The owners of the boxes react to the bangers as if they were intruders.

Banging is a quite different type of behaviour from the screaming parties which dash rapidly round the Tower, particularly on fine evenings. Birds in the boxes often answer the screams of those outside, and sometimes come out and join in. Screaming parties are a communal display in which a whole colony may join, and perhaps members of other colonies also, as more individuals have sometimes circled the Tower than could be accounted for by the residents. Screaming parties occur throughout the breeding season, but only in fine weather, and they are rare at the start and end of the season when few birds are present.

(7) THREAT DISPLAY AND GREETING OF MATE.

A Swift entering an occupied box is usually greeted by incipient threat display. The occupant screams, rises up on its feet (instead of sitting with its body on the floor of the box) and advances with wings held partly out and raised. Alternatively, it raises only the wing nearest the newcomer, tipping its body sideways and exposing the feet, which is probably significant as the feet play the chief part in fighting.

So far, the display is the same whether the newcomer is the bird's own mate or a stranger, but the next stage differs. If it is the bird's own mate, both may now scream and advance, and the mate may also show incipient threat display, but they then quickly come together, sometimes almost bowing at each other, and start vigorous mutual preening. A similar sequence of behaviour is sometimes seen when the pair enter their box one immediately after the other, and occasionally when both are already sitting in the box.

We have twice, on May 9th and 11th, 1950, seen a definite scuffle between a presumptive pair. In each case the box had until then been occupied by a single bird, so we perhaps witnessed the first meeting between the pair that year. The bird in the box greeted the newcomer with much threat display, the newcomer responded similarly, and a short scuffle developed, though the birds did not actually grip each other with their claws. One pair quickly settled down together for the night. In the other case, one of the birds dropped out of the box, but was back two minutes later, after which there was a second scuffle, and the pair then settled down together for the night.

The extent of the threat display between the pair varies greatly. There is a tendency for it to diminish in intensity as the season progresses, but sometimes it is extremely reduced even early in

the season, while occasionally it is strong late in the season. Sometimes it is omitted entirely and often it is reduced to a short scream with no posturing, but often there is a little posturing. The behaviour is usually so unlike fighting that we at first called it a "greeting ceremony", but its origin from threat display is now evident.

If the newcomer to the box is a stranger, the threat display of the owner becomes exaggerated. The newcomer may then leave at once, but occasionally it responds. Both birds then prance round each other on raised legs, then pause with the near-side wing tipped up. They then come to grips and a fight commences.

(8) FIGHTING.

A strange Swift entering a box usually acts very nervously, sometimes staying quietly in the entrance before proceeding further in, then exploring tentatively, sometimes flicking its wings or walking high on its feet. Even if the owners of the box are absent, it often leaves after a minute or two, and it does not respond to begging chicks. If one of the owners is present and displays at it, it often leaves immediately. Early in the season, however, an intruder sometimes persists and a fight follows. Out of 16 observed fights, 15 occurred before there were eggs in the box concerned. Five were seen in 1949, 8 in 1950, but only 3 in 1951. Nearly all occurred in May, a few in early June and 1 on July 13th. Six started in the morning, 1 at midday, 3 about 1700 hours, 1 at 2000 hours and 5 were first noticed on our routine visit at dusk.

Although there have always been unoccupied boxes available in the Tower, the fights are probably for ownership of a box rather than of a mate. A fight often developed between an intruder and one of the owning pair when its mate was absent, and one of the pair (? the male) always does much more of the fighting than the other. Omitting brief scuffles, due to the ejection of a bird which perhaps entered by mistake, the shortest fight lasted for 20 minutes, the longest for 343 minutes. In another case, two birds were found already fighting and continued for a further 333 minutes. Fights of 2 to 5 hours seem not uncommon. In one box there were fights on two consecutive days, in another case a second fight took place three days after the first.

Nearly all the fights started when an intruder entered an already occupied box. On one occasion, however, a bird entered a temporarily empty box with an angry scream, and when we next looked in five minutes later, two birds were fighting at the entrance hole with a third behind them on the nest. Likewise, Weitnauer (1947) has recorded three birds entering a hole in quick succession and then fighting. This suggests that a fight may occasionally start in the air.

After a few seconds of excited screaming and posturing, the birds rush together, gripping each others' legs with their claws and struggling furiously. They remain thus gripped together for the rest of the fight. The claws are sharp and their grip is extremely strong, but as the birds usually grip their opponent's legs, little if any damage results. The birds also peck repeatedly with their beaks at whatever part of their opponent's body comes within range, usually the wing or body feathers. The pecks are vigorous but harmless, as we tested by inserting a finger during a fight and allowing a bird to strike it. The birds struggle with their wings, sometimes shifting their positions. Periods of great activity alternate with pauses when the birds lie motionless and silent, apparently exhausted, with nictitating membranes over the eyes.

After a time, one of the fighters will be found to be lying on its back below the other. Surprisingly, it is usually the under bird which is winning. It gradually shifts the other towards the entrance hole, the other resisting, and though it is hard to be sure of what is happening, as the birds are closely interlocked, it seems that the under bird is trying to throw the other out of the hole. At this stage the upper bird sometimes tries to escape on its own, but it cannot do so, as the victor does not relax its grip. Eventually the fight carries on over the hole itself, with one bird partly outside, and then both birds usually tumble out, though occasionally one has managed to remain in. One fight continued with one bird partly out of the hole, flapping violently, for as long as 12 minutes.

During their struggles, the birds scream violently, and during the later stages the bird that is getting the worst of it utters a plaintive piping call, not heard in any other circumstances. The loser after appears to be in great agony, alternately piping and lying back breathing faintly. On one occasion, after a fight had lasted $4\frac{1}{2}$ hours, we accidentally disturbed the birds. The apparent victor ran to the entrance hole, while the other lay back and seemed utterly exhausted. After about four minutes, the victor returned, sat beside the other and pecked it. There was no response, so it got onto it and started dragging the unresisting body to the entrance hole, but it was then again frightened, and left the box. A moment later, the apparent corpse rose and left the box, evidently quite uninjured, though it had looked dead for several minutes. After other fierce fights also, we have found no trace of a dead or injured bird beneath the nest hole, nor was any bird visibly damaged. Hence the apparent ferocity of the fights is misleading. On May 20th, 1948, however, we found a freshly dead adult male, perhaps killed in a fight, in a box with a pair.

On one occasion when an intruding Swift looked into a box, one of the owning pair at the back of the box rushed past its mate and attacked, while its mate, who had been nearer to the enemy, retired to the nest. In every other fight, also, one member

of the owning pair (? the male) took a much more active part than the other. The more retiring sex sometimes took part for a short while at the start, screaming and attacking the intruder, but after a few minutes it usually retired to the nest and took no more notice. Sometimes it left the box altogether; while one such bird built calmly at the nest, another quietly entered and left several times, and yet another preened one of the fighters repeatedly!

In one fight, four individuals, presumably two pairs, were involved. Two were fighting hard, with a third joining in occasionally, when a fourth bird entered. The third bird immediately left the other two and attacked the newcomer, and after five minutes it was driven from the box. The third bird then joined the original fight. After 20 minutes one of the three was pushed out of the box, but the other two continued fighting for some time.

In a long fight the presumed female usually left well before the end, but she sometimes remained throughout a brief fight, after which the mated pair sometimes scuffled mildly with each other for a few moments, as also recorded in the Robin (*Erithacus rubecula*) following ejection of a rival (Lack, 1943). In one case on May 17th, a third Swift entered a nest-box a little before dusk. It was ejected after a brief scuffle, and the owning pair had a slight dispute before settling down. A few minutes later the third bird entered again, it was again ejected and there was again a scuffle between the owning pair, which then settled down for the night at opposite sides of the nest-box, instead of side by side as is usual.

An exceptional fight occurred on July 13th, 1950, in a box with a 25-day-old chick. An adult fed the chick at 1115 hours and remained in the box. At 1121 another adult, its throat-pouch full of food, entered. The parent usually pays little attention to its mate entering with food for the young, but this bird was immediately attacked. A confused fight followed over the hole; after 9 minutes one bird was half out of the hole, and after it had clung there for a further 6 minutes, both fighters fell out. Six minutes later an adult returned, possibly fed the chick, but then quickly settled by the hole preening, and remained preening for 29 minutes, which is very unusual at this stage, and suggests that it had been engaged in the fight. This is the only fight that we have seen with young in the nest, and it was presumably due to an adult entering the wrong box by mistake. The record is of interest in showing that the parent appeared to recognise immediately that the other adult was a stranger, even though it was carrying food for the young.

Some of the Swifts had an aggressive display at us. This was quite distinct from the threat display against other Swifts. The bird would suddenly lunge forwards, flicking the wings partly

open and making a sharp noise on the box. A few adults violently attacked a hand inserted in the box, gripping strongly with their claws, and sometimes drawing blood. The aggressive display with flicked wings was also given by some of the young, normally those whose parents behaved similarly.

(9) COURTSHIP.

The pair is probably formed when the second bird arrives in the box at the beginning of the season. As already mentioned, the first display between the pair resembles threat, but this subsides. The most characteristic display between the pair is mutual preening, especially of those parts of the body which the bird cannot preen for itself, the throat, nape, and other parts of the head. Mutual preening occurs throughout the breeding season, but is particularly vigorous before the eggs are laid, when it may almost look like pecking. Sometimes it is accompanied by vibration of the wings, and occasionally in the courtship period the birds sit close together in a rather humped position with the feathers fluffed out, excitedly preening and calling. Occasionally one bird has then tried to mount the other, but as the usual behaviour prior to copulation is different, we think that mutual preening is not linked with sexual display in the narrow sense. It is perhaps comparable with the courtship-feeding of the Robin, which likewise continues through much of the breeding season, is quite separate from the pre-copulatory display and perhaps has a "bond-forming" function (Lack, 1943).

A gentle "clucking" note, lower pitched and much softer than the usual scream, is characteristic of the courtship period. It is not heard from unpaired individuals, but starts as soon as a mate has been obtained and ceases when the eggs are laid. It is uttered by only one of the pair (? the female), usually when both are together in the box, but occasionally when one is alone. We have heard this call resumed in midsummer after pairs had lost their eggs, and also in August just after the young had fledged, while in the non-breeders (presumed first-year birds) it is heard throughout the breeding season. It is often heard independently of any particular display, but also accompanies mutual preening, though not copulation.

The duet screaming, already mentioned, is another mutual activity of the pair, a joint threat display at other Swifts flying past. The two birds scream in rapid alternation so that there is no pause between the sounds. This is probably the "sweeree" call mentioned in *The Handbook*, where its double origin was apparently not recognised. We have not determined whether the duetting is always started by the same member of the pair, nor whether the one which screams at a lower pitch than the other is the same as the bird which clucks.

We not infrequently saw copulation in the boxes, but only between 0630 and 0730 and between 1630 and 1830 hours, these being the times of day when Swifts seem most excited, both in their boxes and round the Tower. A characteristic subdued call, between a scream and a cluck, usually but not invariably preceded copulation. The female sat in the normal resting position on the floor of the box. The male then mounted, gripping the female's back with his claws and her nape with his beak. The female elevated the tail and the male twisted round, on one occasion almost lying on his back in the effort. Usually the male mounted three or four times in succession, but sometimes only once. Afterwards, there was usually mutual preening, but clucking was not heard. Copulation was observed only just prior to, and during, the egg-laying period. We, like other observers, have seen what we took to be copulation on the wing, but there has been much dispute as to whether this is effective or not. When we analysed the published records in *Beiträge zur Fortpflanzungsbiologie der Vögel*, where most have appeared, we found that they were seen around either 0700 or 1800 hours, the same times of day at which we observed copulation in the Tower. This coincidence supports the view that Swifts copulate both on the wing and in the nest-hole. Certainly, we did not see copulation in the boxes as often as we should have expected if it happened only there. Moreau (1942) thought that copulation occurred both in the nest-hole and in the air in the White-rumped Swift (*Apus caffer*) of Africa.

Some unexplained behaviour was seen between a pair in the first three weeks of June, 1949. One bird often pursued the other round the box, almost treading on its tail. Twice it mounted, but the under bird then slipped out of the nest-hole, leaving the other within. On several occasions vigorous mutual preening led to display, a chase and then a short fight, after which both birds went out. Twice, a third bird was involved for a time. The birds built a large untidy nest, and the box was later abandoned after a long fight on June 21st. We do not know enough to interpret this behaviour.

(10) NEST-BUILDING.

All the nests have been placed at the back of the box, as far from the entrance hole as possible. Knowing this, we at the start placed a little hollow ring of straw at the back of each box, and many pairs lined this ring for their nest, while others built to one side of it. The same nest is used and added to year after year.

Building often starts on the day that the second member of the pair arrives, but sometimes there was a delay of several days. Occasionally, we saw nest material in a box before the birds spent the night there. Both sexes bring material and build it into the nest; their behaviour is indistinguishable. They work quite independently of each other. Thus, if one is on the nest when

the other arrives with material, the sitter does not assist the newcomer. On two occasions when both adults arrived together with material, there was some display and even a brief scuffle before each built it in. The material is normally brought in the beak, but sometimes inside the mouth.

The nest material is caught in the air, hence building is erratic, being most frequent when there is sufficient wind to carry up suitable material into the air. The time between successive visits with material varies greatly. One bird returned with an elm seed only two minutes after leaving the box. Dead grass, hay, straw, dead and green leaves, flower petals, winged seeds, seed fluff, bud sheaths, cocoons, feathers and scraps of paper, including a bus ticket, have been found in the Tower nests. On several occasions, birds have brought fresh poppy petals, which made a vivid splash of colour in the nest. All the birds collected hay in large quantities when a field near by was cut. Just after the local pigeons had had a scrap on the roof, a Swift entered with a pigeon's feather. Another bird brought in a Cabbage White Butterfly (*Pieris brassicae*), making no attempt to eat it, but trying to stick it down to the nest, in which it had great difficulty as the butterfly started a reflex jerking of its wings.

The material is stuck to the nest with saliva, which is used from the start of building, and has even been seen in a box before the birds had collected any material. When secreting saliva, the bird sometimes continues to hold the nest material in its beak and at other times lays it down. It crouches with the head held rather low, sometimes nodding the head or vibrating the whole body, the wings being held partly out. Bill and throat can be seen moving, and saliva appears in sticky threads. The bird usually builds for three to four minutes after bringing material into the box, with pauses of up to half a minute to rest, when the head is often laid on the side of the nest. One bird which was disturbed when building raised its head and swallowed hard. The nest is shaped by the bird turning round in it and scrabbling with its feet.

Building does not cease with the laying of the eggs, but continues right through incubation. As a result, the nest is larger and much neater at the end than at the start of incubation. An adult relieving its mate on the eggs often returns with nest material in its bill, and the incubating bird spends much time pecking round the outside of the nest and sticking down odd pieces of material. The pecking looks rather aimless, and the material seems to be found by touch, not sight. This may be because many natural nest-sites are darker than the Tower boxes, for the latter would seem light enough for the birds to have used their eyes. Heinroth (1911) has suggested that the Swift is long-sighted, and cannot focus on near objects. This may be so, but in that case it is surprising how accurately it feeds its tiny young.

Building stops completely when the young hatch, though we once saw a parent (with chicks three weeks old) playing with a feather in the box. The non-breeders continue building throughout the summer, but spend much less time than the incubating birds in sticking the material down. Because of this, the nests acquire more material but are much less tidy than those of incubating birds. Parents which have lost their eggs also continue building until late into the season.

On July 26th, 1950, a bird was caught with nest material in a box where building had occurred intermittently through the summer. This bird, which we ringed, we supposed was a first-year non-breeder, but two days later it was caught feeding its 21-day-old chicks in another box! On June 4th, the original female of this latter box had been found dead, and the newly laid clutch was thrown out. We guess that the male of the pair then mated up with the presumed first-year bird, which then laid a clutch of eggs and raised a family, but at the same time retained some of its first-year behaviour with reference to the box which it originally occupied. This interpretation may be thought far-fetched, but it is difficult to see why otherwise a bird should build in one box and raise young in another. Further, Weitnauer (1947) has recorded a first-year male which paired up with an older female and raised young, but which retained its first-year behaviour in relation to night ascents, then deserting its young for a time.

(II) EGG-LAYING.

The first egg was laid between 7 and 29 days after the start of building. In seven cases, we know that the egg was laid between 0740 and 1115 hours, and in one case between 1715 and 2045 hours, the last being the only occasion on which we have any reason to think that an egg was laid after noon. Breeding seasons and clutch-size are treated elsewhere (Lack, 1951).

On the morning when the egg is laid, we have sometimes found faeces in the box. The adults do not normally defæcate in the boxes, and this suggests that the laying female may not leave the box between waking and producing the egg. We have seen her go up to the entrance hole when Swifts were flying round outside, but, if she had not yet laid her egg, she returned quickly to the nest. The male is sometimes present in the box while the female is laying the egg, and in one case he kept trying to sit on the first egg, but the female each time managed to insert herself under him, and he left at 1015 hours. The female then sat quietly, and at 1043 humped her back and looked under her wings, which were held low. She then resumed a normal position, and when she preened at 1100 hours, the second egg could be seen under her. At 1104, she moved the eggs a little with her beak, and seven minutes later she went slowly to the hole and flew out. We

recorded similar behaviour by the laying female on other occasions, including the humped attitude, her turning of the eggs a few minutes after laying, and her departure soon afterwards.

If the clutch is destroyed or ejected, Swifts sometimes, though not usually, lay again. In two cases in which the clutch was lost during incubation, the repeat clutch was started respectively 10 and 17 days later, while another pair that deserted on the day that the first egg hatched laid again 12 days later. In addition, we have three records of pairs which laid one or two eggs but did not incubate them, and later laid again, the new clutch following respectively 6, 24 and 29 days after the previous laying. There was also a remarkable pair which in 1950 laid four eggs in succession at two-day intervals, throwing out the first two but incubating the last two. In the same box in 1951, a pair (? the same) actually laid five eggs in succession, on June 6th, 7th, 9th, 10th and 13th or 14th respectively. Some of these eggs were ejected, but we replaced them in the nest, so that the bird incubated all five eggs, but the only ones to hatch were the last two laid. It is most unusual for a Swift to lay a clutch of more than three, or to lay eggs at a shorter interval than two days, but we saw only two adults in this box, and have no reason to think that two females were involved.

Weitnauer (1947) states that Swifts will not accept extra eggs added to their completed clutch, a point that he tested on five occasions. We have in three cases added a third egg to a clutch of two, in two cases on the day that the second egg was laid, and in the third case after six days of incubation, and in each case it was accepted.

- (12) EJECTION OF EGGS.

Swifts not infrequently ejected one of their eggs, or even the whole clutch. This might happen at any stage between laying and hatching. Usually the ejected egg was left for a while in the box just outside the nest, but later it often disappeared, presumably being dropped out of the entrance hole.

Any cracked egg was normally ejected, and if we replaced it, it was usually ejected again within a day. An infertile egg was sometimes ejected, but it was sometimes retained throughout incubation and for several days after the other egg or eggs had hatched. A fertile egg was also ejected not infrequently. Except on one occasion when a parent disturbed by us accidentally carried an egg between its legs and body on to the floor of the box, we do not know why fertile eggs were ejected. Perhaps the parents are rather careless, in addition to which they seem to have no instinct to bring misplaced eggs back into the nest. When we replaced an ejected egg in the nest, the parents often hatched it successfully, though sometimes they again ejected it. In 1951, a pair threw out one of their eggs seven times during incubation, in five cases

the first egg and in two cases the second egg of their clutch. Each time we replaced the ejected egg, and eventually both hatched. In another case when we replaced an ejected egg several times, the parents deserted.

Swifts sometimes threw out their complete clutch, possibly in one or more cases due to disturbance by us, but usually for no apparent reason. Weitnauer (1947) claims that single eggs and complete clutches may be ejected in abnormally cold weather, and Cutcliffe (1951) also states that eggs tend to be thrown out in bad weather. Our evidence on this point is inconclusive. If the correlation with cold weather is genuine, it might mean either that abnormal cold deranges the reproductive behaviour of the parents, or that cold weather addles the eggs, which are then ejected. There is, however, no evidence for the latter suggestion at present. As mentioned later, the parent Swifts sometimes leave their eggs uncovered for several hours of the day, including in cold weather, but the eggs seem unusually resistant to cooling, and they often hatch out after such treatment. The whole problem of egg ejection, and of the degree to which the eggs can withstand cooling, requires further study.

We have twice seen an egg ejected. A sitting bird was fidgetting in the nest with head down, when an egg suddenly popped out from its flank, but so quickly that we could not see how it was ejected. (Egg-shells are ejected by the foot, and the foot may well have been used in this case also.) In another box, both parents were sitting in a box with a freshly laid but cracked egg on the rim of the nest. One of the birds suddenly picked up the egg in its mouth, and holding it with the long axis at right angles to the beak, ran up with it to the entrance hole, and dropped it near, but not out of, the hole. The egg rolled back towards the nest, but the parents paid no more attention to it at that time, though it vanished later in the day. Moreau (1942) has seen the African *Apus caffer* carrying an egg in its mouth to the nest entrance and dropping it out.

(13) INCUBATION.

The birds usually start incubating by day when the second egg is laid, but in a clutch of two the first egg often hatches a day before the second, presumably because it receives some incubation on the night before the second egg is laid (see full discussion in Lack, 1951). In May, 1948, several clutches were completed during unusually cold and stormy weather, the parents left their eggs uncovered for much of the day, and the interval between the completion of the clutch and the hatching of the young was 4-5 days longer than usual.

The incubating bird normally sits with its back to the entrance hole. It is continually fidgetting, preening, scratching, vibrating the body, shuffling the eggs or turning them with its bill or feet,

rattling its bill on the side of the box, picking up loose nest material or building it into the nest. If a banger is heard outside, the sitter may turn temporarily to face the entrance hole, and sometimes it even leaves the eggs and looks out of the hole, but usually it returns to the eggs after a few minutes. One bird stood up over its eggs each time that it heard the loud clapping from the Parks near by as successive New Zealand wickets fell to a triumphant University. In very hot weather, the parent sometimes sits in the box without covering the eggs. When the eggs are turned, they can often be heard rattling on the floor of the box, but they seem to come to no harm.

The two parents take turn and turn about on the eggs. The sitter often greets the arrival of its mate with a scream or with very mild threat display as it moves slowly off the eggs. Sometimes it is reluctant to leave, and the newcomer then prods it gently or gradually insinuates its body under that of the sitter. On one occasion when the newcomer was kept waiting, it picked up some grass lying in the box, presumably a displacement reaction. The bird which has been relieved usually sits by the entrance hole for two or three minutes and then flies out. Very occasionally it has not flown out, but has returned and taken its place again on the eggs, relieving the bird which had only just come in. If the newcomer has entered with nest material, it may build it into the nest immediately, or it may settle on the eggs and build later, while incubating. Sometimes, and particularly when the sitter has not been relieved for a long time, it leaves the eggs, and after a pause flies out. The eggs may then be uncovered for an interval varying from one minute to at least $6\frac{1}{2}$ hours. When both parents stay in the box, as in the early morning or in continuous rain, one sits on the eggs while the other often sits close alongside it. We do not know whether they periodically change places on the eggs under these circumstances, nor whether they relieve each other at night.

In 1949, we carried out 4 dawn-to-dusk watches on the incubating birds, relieving each other about as frequently as the parent Swifts. We were able to observe the 11 upper nests in the Tower simultaneously, helped by the fact that the returning parent makes a slight bang as it alights at the hole. In 1950, we carried out 4 watches from 0800 to 1800 hours on one incubating pair, and in 1951, 5 ten-hour watches on up to 10 different nests. We found a ten-hour watch far less tiring than one from dawn to dusk. Altogether, we obtained in this way 58 ten-hour records of incubation, the total being smaller than the previous figures might suggest because not all of the nests mentioned contained eggs on every visit.

The length of time for which each parent sits on the eggs depends primarily on the relieving bird, i.e. the sitting bird normally departs as soon as it is relieved, however short or long

the interval, though occasionally it leaves before being relieved. Under the latter circumstances, the next bird to return is sometimes the one that has been out longest, but occasionally one bird has returned in less than five minutes and the other a few minutes later, suggesting that the sitter left for a few minutes, had a short look round and then returned without feeding. Likewise when both parents have stayed in the box in rainy weather, one of them has sometimes gone out for from 1 to 10 minutes and then returned, presumably without having fed.

For our 58 ten-hour records, the average number of reliefs occurring between 0800 and 1800 hours was 5.2, which means that the average interval for which the parent was away was 115 minutes. The maximum number of reliefs at one nest in the ten hours was 12, the minimum 2, and the interval between successive reliefs (i.e. the length of a sit) varied between 2 and 345 minutes. There were often big differences in the length of individual sits at the same nest on the same day. On the average, the two members of the pair bore an equal share, as found by Weitnauer (1947), though Cutcliffe (1951) thought that the female bore the major share. Some pairs consistently relieved each other at more frequent intervals than others. As shown in Table 1, of five pairs watched on three different days in 1949, pair A had consistently the shortest average sit, pair E consistently the longest, and B's average was always shorter than C's. Pair D were more erratic, as were pair F (see footnote).

TABLE 1. AVERAGE LENGTH OF EACH SIT BY 5 PAIRS ON 3 DAYS IN 1949.

PAIR	JUNE 15	JUNE 21	JUNE 25
A	72 mins.	55 mins.	65 mins.
B	79 "	67 "	120 "
C	90 "	74 "	120 "
D	120 "	63 "	93 "
E	149 "	99 "	183 "

NOTES: (i) The averages for pair F were 103 minutes on June 15th and 106 minutes on June 21st, but by June 25th the eggs had hatched.

(ii) Watch from dawn to dusk on June 15th and 25th, but starting only at 0645 on June 21st.

The average length of sit is longer before than after midday, as was particularly clear in the 1949 watches started at dawn. The birds relieve each other at particularly long intervals early in the mornnig.

In 38 of our 58 ten-hour watches, the eggs were covered by one or other parent throughout the ten hours, and they were left uncovered for only one minute in another case, but in the remaining 19 the eggs were left uncovered for a total varying from 4 to 392 minutes out of the 600. There was much individual variation. Thus on one day, when the eggs in one nest were left uncovered for 172 minutes, another pair brooded continuously. The longest period for which the eggs were uncovered, just over

6½ hours, occurred in cold and squally weather on the day before the eggs hatched; the same pair had brooded continuously throughout an earlier watch. The parents rarely left their eggs uncovered before 1100 hours. Thus considering all our watches, and scoring 1 for each hour in which each nest was left uncovered for at least part of the time, 44 out of 52 records occurred between 1100 and 1700 hours, being very evenly divided over this part of the day, while only 4 occurred between 0800 and 1100 hours and 4 between 1700 and 1800 hours.

Incubation was sometimes intermittent for a day or two after the clutch was completed, but, apart from this, the extent to which the eggs were left uncovered did not seem influenced by the stage of incubation. Indeed, it is difficult to know what causes the observed variations. Surprisingly, weather had no clear influence, possibly because the weather has several rather different effects. One might guess that a brooding parent would be more likely to depart leaving the eggs uncovered, either during very cold weather through becoming hungry before its mate returned, or in very hot weather when the eggs would scarcely require brooding. We perhaps observed both effects, but it is hard to be certain. It might also be thought that the time for which the relieving parent stays out feeding would be shorter in good than bad weather, as feeding is easier in good weather, but our data do not support this view. Great irregularity in the incubation rhythm, and a similar difficulty in relating it to weather or other factors, was found by Moreau (1942) in the African *Apus caffer*.

(14) BROODING OF YOUNG.

The eggs usually hatch on consecutive days, as discussed elsewhere (Lack, 1951). The eggshell is sometimes left in or beside the nest, where it gradually disintegrates, but at other times it disappears, presumably being removed from the box by the parents. On one occasion, shortly after a chick had hatched, the brooding adult ejected the eggshell backwards from the nest with a quick movement of one leg.

The parents quickly respond to the presence of a newly hatched chick by bringing food, but the change from incubating to feeding behaviour is gradual, as for the first week of their life the young are brooded almost continuously, each adult still regularly relieving the other on the nest when it returns with food. The time for which each parent broods the young is primarily determined by the incoming bird, and seems to be basically a problem of feeding frequency, which we analysed in our earlier paper, showing the marked influence of the weather (Lack, 1951). After it has been relieved, the brooding parent usually waits for a minute or two by the nest-entrance before flying out. On one occasion when the brooding parent was pushed off the chicks by the relieving bird,



SNOW-BUNTING (*Plectrophenax nivalis*).
NEST. SWEDEN.
(Photographed by P. O. SWANBERG).



SNOW-BUNTING (*Plectrophenax nivalis*).
FEMALE.
SWEDEN.



SNOW-BUNTING (*Plectrophenax nivalis*).
MALE.
SWEDEN.

(Photographed by P. O. SWANBERG).



SNOW-BUNTING (*Plectrophenax nivalis*).
FEMALE AT NEST. NORTH ICELAND.
(Photographed by BERNARD JEANS).



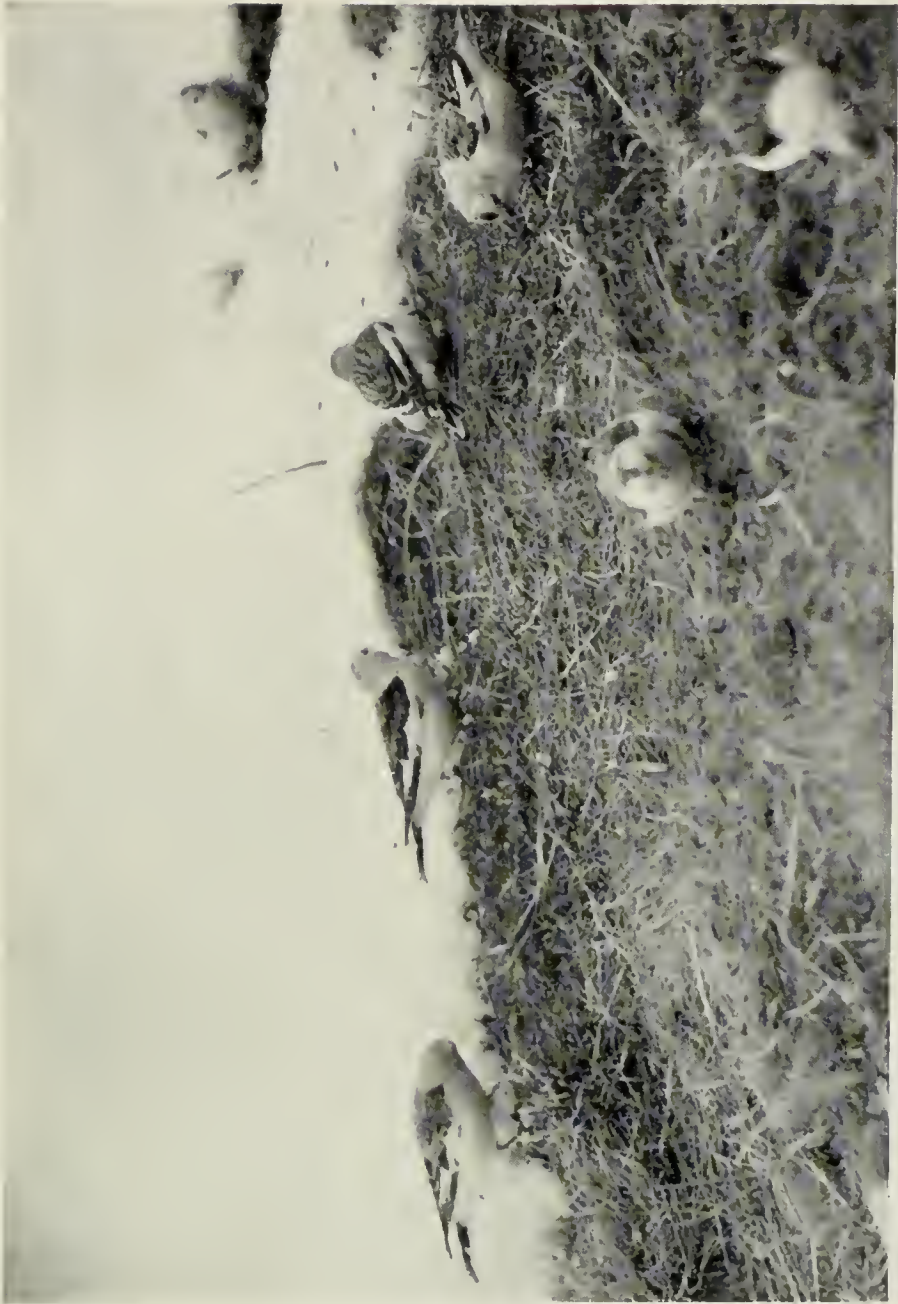
SNOW-BUNTING (*Plectrophenax nivalis*).

MALE. NORTH ICELAND.

(Photographed by G. K. YEATES).



SNOW-BUNTING (*Plectrophenax nivalis*)
FEMALE. NORTH ICELAND.
(Photographed by G. K. YEATES).



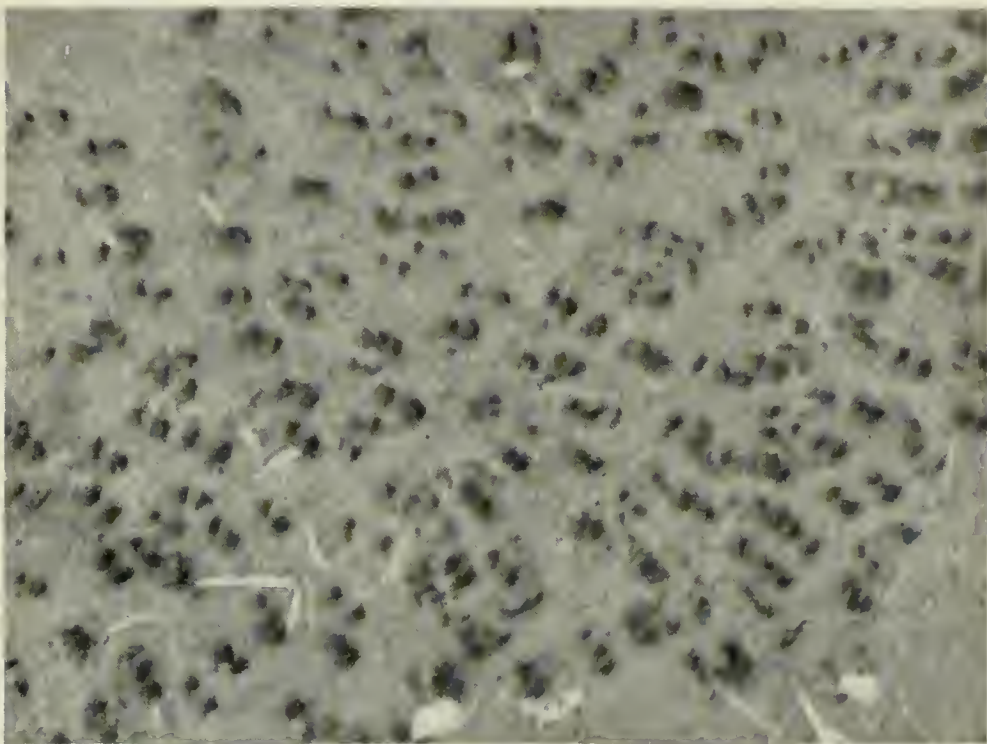
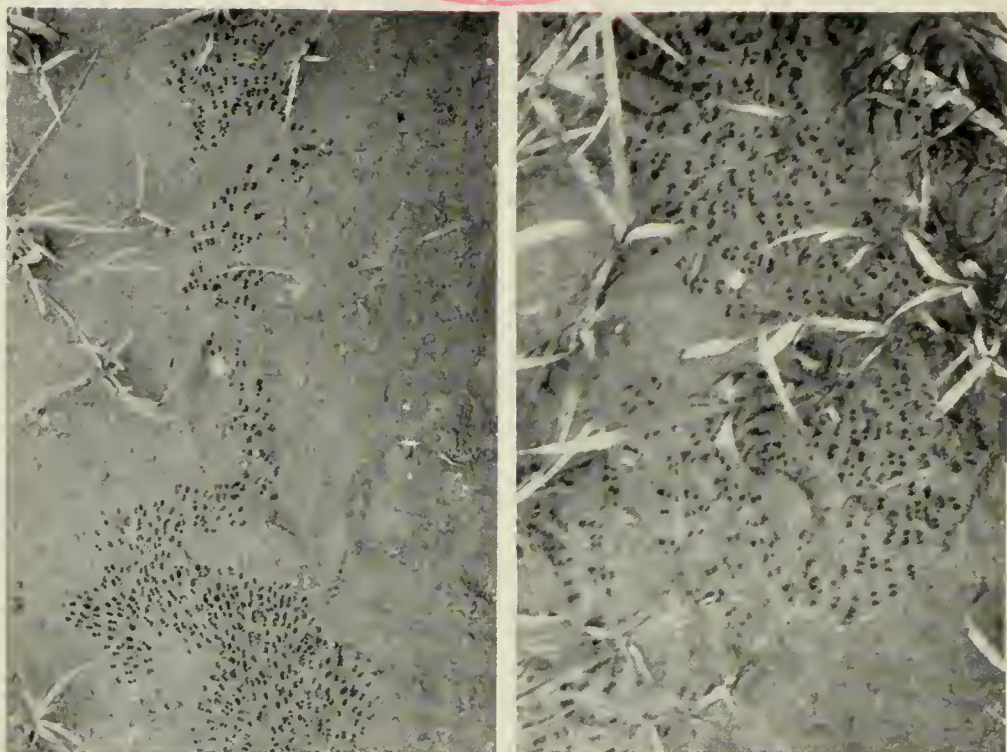
SNOW-BUNTING (*Plectrophenax nivalis*).
WINTER FLOCK. JAMTLAND, SWEDEN.
(Photographed by C. PERSSON).



SNOW-BUNTING (*Plectrophenax nivalis*).

WINTER PLUMAGE.

(Photographed by ARTHUR CHRISTIANSEN).



BILL MARKS OF JACK SNIPE (*Lymnocyptes minimus*) IN MUD. NOTTINGHAM, MARCH 16TH, 1951.

UPPER : TWO TYPICAL PATTERNS.

LOWER : NATURAL SIZE.

(Photographed by J. F. BANKS).

(See p. 223).

the displaced bird pecked vigorously at nest material, and this also happened once when we removed the chicks for weighing. These were displacement reactions.

In 17 ten-hour watches on broods under a week old, the young were covered for 98 per cent. of the time, and in 11 similar watches on broods in their second week for 52 per cent. of the time, while young more than a fortnight old were covered for 7 per cent. of the time or less. Very wet days were excluded from the above summary, because then the adults sometimes stay in their boxes, and it becomes difficult to tell whether they are really brooding the young or are merely sitting beside or over them. The effect of rain is illustrated by our records from 0800 to 1800 hours on July 20th, 23rd and 25th, 1951. Considering 8 broods over a fortnight old, a parent was in the box with the young for an average of 9 per cent. of the time on July 20th and 2 per cent. on July 25th, both days being fine, but for an average of 78 per cent. of the time on July 23rd, which was very wet. Further, both parents were together in the box for a negligible amount of the time on July 20th and 25th, but for 34 per cent. of the time on July 23rd. It is chiefly in continuous heavy rain that the parents shelter in the boxes in this way. In cold and windy, but dry, weather, when food may also be very scarce, the parents with older young usually stay out hunting.

(15) FEEDING OF YOUNG.

The parent returning to the box with food for its young has an enormous bulge just below the beak, due to the mass of insects packed into the throat and stuck together with saliva. There is usually a definite food-ball, though at times the insects adhere together only loosely. On coming to the nest, the adult holds its head low with throat moving and then produces the insects. When the chicks are very small, the adult passes over the food in several successive portions; sometimes one mouthful to each chick, and the feed may last for three or four minutes, as the adult sometimes takes the food back into its own mouth and then produces it again, presumably because the original meal was too large for the chick. When the chicks are older, the food is always passed quickly in one large ball to one of the chicks only.

We on two occasions thought it possible that food passed between a returning adult and its mate brooding the young chicks, but we could not be sure. If it occurred, it may have been by accident, the mouth of the brooding parent getting in the way at the critical moment. We never saw one adult feed the other during incubation, and we wonder whether Weitnauer (1947) is correct in saying that this is occasional, as the billing in mutual preening sometimes looks rather like feeding.

The adults normally bring food for the young every time that they return to the nest, including on the last visit when they come in for the night. If, however, a banger is going the rounds, the parent birds often return to their boxes without bringing food, and then sit in the entrance holes screaming as the intruder flies past. The ready return of these adults, and their similar return in numbers in a sudden shower, suggest that they often hunt for food near their nests.

The chicks are normally fed on the nest itself. This is true even in the later stages, when between feeds the chicks wander about the box and often sit looking out of the entrance hole. On the return of a parent, they dash back to the nest and beg for food. In thatched roofs, we have sometimes found the young wandering for some distance from the original nest, and their habit of returning for the feed perhaps helps to prevent them from straying too far. Very occasionally when the young were exceedingly hungry, they appeared to be fed at the entrance hole by the returning parent, which immediately left again.

The chicks call repeatedly, a plaintive note much weaker than the adult's scream. One was heard before it was out of the egg, the sound being clearly audible six feet from the closed box. Another youngster, found with a damaged wing about a mile from the Tower the day after it had fledged, still gave the typical nestling call when handled. The young beg for food by squeaking and waving the open bill. When they are older, they also pursue the adult round the box with excited flapping of the wings, repeatedly trying to grab its beak in theirs. The begging becomes much more violent when the young are hungry, as during a spell of poor weather, and particularly with broods of three young. The young start to beg as soon as they hear the adult alight at the nest entrance, and when particularly hungry they also react to any other similar noise, such as a sharp gust of wind outside, or a backfire from a car in the road, or a sneeze by the observer, and they then continue the reaction by begging from each other. When excited, also, they often beg from the brooding parent as its mate arrives, and they usually beg when the brooding adult moves off them even though no other adult has entered the box. (The brooding adult of course has no food for them.) After about the first week, the young keep up a quiet high-pitched murmuring throughout the time that the parents stay with them, but not usually when both parents are out.

Very occasionally, presumably because temporarily satisfied, the young did not beg from an incoming parent. With very young chicks, the parent then prodded gently, the young then begged and were fed. We have only four records of an older chick failing to beg. In two cases the adult merely waited for several minutes, after which the chick took the food. In the third case the adult waited for three minutes and then left the box,

still carrying the food. In the fourth case the adult, retaining the food in its throat, preened the chick's throat. It then made some small swallowing movements. The second parent now entered with food. The first parent promptly displayed at it with lifted wing, a most unusual occurrence at this stage of the breeding cycle, and presumably a displacement reaction. The second parent fed one of the chicks while the first parent went to the entrance hole, made more swallowing movements, picked up some faeces, and left.

After it has been fed, the chick sometimes turns away from the adult, calling and shivering its wings, and sometimes it plays with the adult's beak, but there is usually no special behaviour after the feed.

(16) RECOGNITION OF NESTLINGS.

Swifts appear unable to recognise their own young individually, or even to be aware of the correct number in their brood. When weighing broods of only one young, we usually placed a member of another brood in the box so that the adult would not return to an empty nest. On several such occasions the returning parent has fed the strange youngster, though in one case it was ten days younger than its own chick and was much less well feathered. We have also added an extra nestling to a brood of one, and in another case to a brood of two, and in both cases the parents successfully raised the foundling with their own family without any apparent disturbance.

More remarkably, after the last chick of a brood of two had fledged at 0720 hours on July 30th, 1950, and while both parents were still out, we inserted a 26-day-old chick in the box. This chick had been deserted by its parents and had been starving for 40 hours. Being only partly feathered, it looked very different from the departed fledgling and it was so feeble that it failed to beg when one of the adults returned to the box a minute after it had been inserted. Indeed, the returning adult failed to notice the chick, and sat by the entrance hole. The adult later screamed at a passing Swift, which roused the chick to beg feebly, and the adult then turned and looked at it. After 50 minutes, the adult moved from the entrance hole to the nest, where it allowed the chick to preen it, and 20 minutes later it left the box. The chick was not visited by either parent until 1850, when one adult entered, but so quietly that we did not see whether it fed it. On the following day, both parents fed the chick normally, and they continued to do so till it fledged 15 days later. The parents had previously fed their own brood for 40 days, and as they normally migrate a few days after the young have fledged, the addition of the strange chick not only prolonged their nest-care by 15 days, but probably postponed their departure on migration by at least as long.

On one occasion, as already mentioned, an adult bringing food into a box with young was attacked and expelled by another adult in the box, presumably because the newcomer had mistaken this box for its own. One wonders whether, had the rightful parent been absent, the stranger would have fed the young. If so, we may well have failed to notice similar cases of mistaken entry elsewhere. We have also four records of an adult Swift bringing food into a box containing no young. One of these birds we caught and ringed (but did not see again), the other three we watched. Each bird came to the back of the box, investigated the nest, poking about in it, then went to the entrance hole and looked out, then returned to the nest. Two of the birds left after 5 minutes, the other after 28 minutes. Each left with its throat still bulging with food, though one had made some small swallowing movements. After one of these departures, the young in the next-door box were fed within half a minute, suggesting that this parent had been the intruder. Such mistakes are probably more frequent at the Tower, with its symmetrical entrance holes, than in natural nesting sites.

(17) NEST SANITATION.

We have not seen an adult Swift defæcate in the box, and have found fresh droppings from the adults only on the morning when an egg was laid, and occasionally on the first arrival of the birds in May. When the chicks are very young, they defæcate over the rim of the nest, but after they are three to four weeks old they often, though not always, go up to the entrance hole, turn round with the cloaca over the hole, and defæcate outside. Swifts' nests can be located late in the season by the white splashes outside.

In the early stages, the adults appear to swallow the fæces of the young, but later to carry them away in the throat; it is, however, difficult to be sure. The adults seek for fæces particularly just after they have fed the young, and they peck around the box in the same vague manner as an incubating bird seeking nest material. It seems as though they find the fæces by touch, not sight, and fæces are normally removed only when damp. If in their search the adults touch dry fæces they often ignore them. Although the adults continue to remove some of the fæces up to the time when the young fledge, many fæces get left in the box, which becomes extremely dirty. One bird picked up some fæces to which a feather had stuck, and took the whole lot into its mouth.

(18) EXERCISING OF YOUNG.

From the day of hatching, the young can both flap their wings and grip strongly with their claws. Care must be taken in lifting them out of the nest, as they grip so tightly that a claw may be left behind. Very occasionally, a youngster has got pushed out over the edge of the nest on to the floor of the box, and if it is

less than about ten days old, it cannot climb back in again. Surprisingly, the adults do not then feed it, even though it may be only just over the edge of the nest and may beg hard for food; hence it usually dies. We have seen 10-12-day-old nestlings climb back into the nest when pushed out.

At an age of two or three weeks, the young start shuffling round the floor of the box. They take exercise by flapping violently with the wings and jumping up and down, resting every few seconds. Sometimes, the body is tipped forward, the tail spread and the wings vibrated. At other times, the body is pressed against the vertical side of the box, with tail spread and pressed against the floor. Starting when they are about four weeks old, the young do a form of "press-up", the wings being partly extended and pressed down on the floor, taking the weight, while the body is raised until both it and the feet leave the floor altogether. At first the bird cannot sustain this position, and merely hops up and down, but after a few days it can hold its body clear of the ground for a second or two, and the time gradually increases until, just before fledging, the chicks have held this position for 10 seconds or more.

The chicks take exercise particularly in fine weather and when well fed. In July, 1950, after bad weather and poor feeding, they exercised much less. When badly undernourished, the chicks become torpid and clammy, losing temperature control, as we first noticed in the bad summer of 1946, and they may remain in this state for several days. At first, we thought that such chicks were dying, but they recovered amazingly quickly if supplied with food.

The chicks were first seen to make preening movements when about three weeks old, and thereafter the amount of preening increased. A chick will preen itself, other chicks in the nest and its own parents, who sometimes preen the chicks. The mutual preening of the parents in courtship is perhaps linked with this juvenile behaviour.

(19) FLEDGING.

At Oxford most young Swifts left the nest between the third week of July and the third week of August, the latest on September 7th. The young left equally in good and bad weather, departing very gradually, one on one day and one on another, most of them over a period of 3-4 weeks. At least in the years 1948-51, there was no case of a temporary hold-up due to bad weather. Hence the departure of the young was in marked contrast to that of the adults in 1951, described later.

The young Swift leaves the nest fully able to take care of itself, and independent of its parents. This is unusual in birds, particularly in an Order placed close to the Passeriformes. We suppose that the young migrate on the day that they leave the nest. No young Swift has returned to our boxes after fledging, and this was

also the experience of Weitnauer (1947), though Cutcliffe (1951) states that some of the young returned to his nests on the evening after fledging. There are two possible explanations for Cutcliffe's finding. At the nests in thatched roofs near Oxford, we found that the older young sometimes wandered off for several feet under the roofs and might be absent from their nests for a few hours at a time. Possibly Cutcliffe mistook such temporary absences for true departures. Alternatively, Weitnauer's and the Oxford Swifts were breeding in nest-boxes, each entered by one small hole, whereas Cutcliffe's birds bred in a church tower to which there was much easier access all round the tower, so that the young might find their way into the tower to roost and, once in, might recognise where they were. In the African White-rumped Swift (*Apus caffer*) the young do not return to the nests once they have flown (Moreau, 1942), but in the Alpine Swift (*Apus melba*), the young regularly return to roost in the colony after they have fledged, staying for several weeks before migrating (Arn, 1945).

The young normally left the nest in the morning, often before 0800, as also found by Moreau (1942) in African Swifts. We have only one record of a Swift leaving after midday, between 1330 and 1930 hours, but another fledgling capable of flight fell from the nest at 1245, probably by accident during excited movements of the brood. Omitting this last case, we observed five actual departures. As already mentioned, the older young spend much of the day looking out of the nest-hole, and in the last few days before they fledge, they spend most of the day there. In one case, the parent left the box at 0825 hours. The chick sat looking out of the entrance hole. It spread its wings and tail, and tipped forward with its head out of the hole, but then turned back into the box. This performance it repeated. Finally, at 0835, it inserted its right wing out of the hole and gently tipped itself out. Another bird behaved very similarly. At 0810, it was found sitting with its head out of the hole and its wings and tail partly spread. It then stretched its wings and preened them, moved back from the hole, and went up to it again. The body feathers were alternately fluffed out and flattened, giving the appearance of deep breathing, and the tail was moved up and down. The youngster then stretched its wings above its back, and tipped forward half out of the hole, but hesitated to make the final effort, and scrambled awkwardly back into the box, supporting itself on its wings. After sitting by the entrance hole for about a minute, it slipped out.

In several other cases we saw similar behaviour prior to fledging, but as the preliminary hesitations occasionally last for several hours, or even for more than a day, we have not always stayed to watch the final departure. In another case, a fledgling launched

itself quietly from the hole without our having seen any preliminary movements. Twice, we saw a fledgling leave, possibly by accident during the excitement, when bangers were going round the Tower.

When another nestling is present in the box, it seems unaffected by the departure of its companion. It sometimes leaves on the same morning, but often not until from one to several days later. All the young referred to above fledged when both parents were out of the box, and this is probably normal. Hence the parent Swift is unaware that the young bird has gone, and on its next visit it returns as usual with food to the now empty box. We have several times watched its subsequent behaviour. The adult moved on to and then off the nest several times, walking rather high on its feet as in threat display, then stretched the wings, yawned repeatedly, poked the nest with its beak and displayed at it with one wing raised; presumably a series of displacement reactions. After this, the bird usually sat about half way up the box, facing towards the entrance. Two of the birds then made violent swallowing movements, involving great effort, with the eyes partly closed, but a third left the box still carrying an intact food pouch. Four of the adults left the box after 8-10 minutes, another after 15 minutes, but we could not always see what they did with the food ball.

If in the later stages a nestling is deserted by its parents, it usually stays in the nest for several days, but eventually it jumps out, even though its wings are not fully grown. It may be able to fly a short distance, but it then comes to earth and cannot rise again. The widespread belief that a Swift cannot take off from the ground is presumably due to people finding these premature fledglings, which look fully feathered, though the wings are not full grown. An adult Swift can easily rise from a flat surface, as we have tested several times.

(20) DEPARTURE OF ADULTS.

The departure of the adult Swifts was studied only in 1951, by a regular roosting check each evening from July 30th to August 18th inclusive. In this period, we recorded the day of departure for 25 parents which raised young and for 8 other adults which had no young. A few other individuals were excluded, either because we could not see clearly into their boxes, or because their departure might have been due to our disturbing them.

At least in 1951, the adult Swifts, unlike the fledglings, tended to depart in waves. Thus 30 out of the 33 recorded departures took place on only 6 of the 20 days of the watch: 5 on August 3rd and 5 on the 4th, then 7 on the 8th and 4 on the 9th, and finally 7 on the 17th and 2 on the 18th. The other 3 individuals left singly on intervening days. The gap of seven days between August 9th and 17th, during which only two individuals left, was probably caused by the weather. The first five days were very

bad, the next two were very fine and were presumably used by the Swifts to feed up prior to leaving. The early morning of August 17th was overcast and rain started at 0745 hours, lasting the rest of the morning. A flock of over a hundred Swifts gradually collected over Oxford and at about 0800 hours, after circling and apparently feeding, most of them set off between S.W. and S.S.W., rising as they went. Some returned and joined another party of about 50, which then left in the same direction. That evening, it was found that 7 out of the 9 "free" adults remaining in the Tower had departed, the other two going next day, leaving only the parents still feeding young.

We had rather expected that the non-breeders would leave earlier than parents which had raised young, but this did not happen during the main period of departures. Thus parents and non-breeders were included in similar proportions in both the first exodus on August 3rd-4th and the last on August 17th. When the main departures were completed on August 18th, however, the only birds which remained were two pairs feeding late broods, and these stayed for $2\frac{1}{2}$ weeks longer, leaving immediately after their young fledged in the first week of September.

In 4 out of 17 pairs both individuals left on the same day, while in the rest one of the pair left 1 to 5 days after its mate. The parents normally left a few days after the last of their young, the commonest interval being 5 days, the longest 7, 9, 15 and 16 days. Two adults left on the same day as the last of their young. In 4 cases one, but never both, of the parents left 1 or 2 days before the last of the brood departed, but in these cases only one of the young was still left. In a brood of one, one of the parents left 5 days before the nestling. The average interval between the departure of the last nestling in each brood and of its parents was 3 days for the first and 5 days for the second parent (reckoning as minus those parents which left before their young).

Weitnauer (1947) states that the parent Swifts usually left on the same day as their young, though a few stayed for another night or two, and that one parent often left several days before the young fledged, as also reported by other workers (references in Koskimies, 1950). This was contrary to our experience in 1951. Further, Swifts on autumn migration tend to weigh much more than breeding adults, suggesting that they have had time to put on weight before departure (Lack, 1951). The extent to which the parents leave their young before they are fledged evidently needs further study. It would be highly remarkable if the parents frequently desert their broods before the end of the normal breeding season, and then migrate before putting on fat; though we can understand how one of the two parents might leave a single chick before the end, as in good weather one chick needs only one parent to feed it. We found that parent Swifts readily

desert through disturbance in the final stages, and we wonder whether many of the reported cases of Swifts abandoning their young may not have been caused inadvertently by the observer.

(21) WORK BY OTHERS.

The literature on the breeding of the Common Swift has been surveyed by Koskimies (1950) and we ourselves gave many references in our earlier paper (Lack, 1951). Hence in the present paper, we have not thought it necessary to refer to the work of others on *Apus apus* except where we seriously differ. We ought, therefore, to record that, except for the few points discussed in the text, we are in full agreement with the conclusions reached by Weitnauer (1947) in his long and important paper, and also with Cutcliffe (1951). The review of breeding habits by Koskimies (1950) is another matter, as the author seems to us to have been uncritical in both his acceptance and his interpretation of the work of others. In addition to various minor errors in emphasis, he includes the following statements which we consider erroneous (the page references are to Koskimies' paper): there is an afternoon rest (p. 14); there is probably no feed on the last return to the nest at roosting time (p. 21); building lasts 8 days (p. 55); incubation starts only after the second egg is laid (p. 60); most of the young fledge at about the same date in any one year (pp. 65, 75); the fledging period is longer in broods of larger size (p. 66, apparently based on two broods in different years studied by v. Boxberger, though Koskimies quotes the quantitative evidence of Moreau to the contrary); the young depart on migration in waves (p. 75); the whole colony tends to leave together (p. 76). The above statements are mainly derived from others, but as the author's aim was a critical review, it is unfortunate that he should have accepted all of them and based arguments on them.

SUMMARY.

(1) A colony of Swifts was induced to breed in nest-boxes with glass backs.

(2) Each year about 20 pairs laid eggs and several non-breeding pairs (? in their first year) occupied other boxes.

(3) The adults arrived in spring and departed in autumn over about three weeks. There was sometimes a hold-up during part of this time. The two members of each pair usually arrived and departed separately.

(4) Each pair normally roosted in their box throughout the summer.

(5) The adults visit the boxes at any hour of the day, but especially around 0730 and 1800 hours. They sometimes shelter in the boxes in rain.

(6) In fine weather single individuals or small parties, the "bangers", may fly up to and brush against the boxes. They are treated as strangers by the owning birds.

(7) When another Swift enters a box, it is often greeted with incipient threat display. If it is the bird's own mate, this quickly gives place to mutual preening. If it is a stranger, a fight may follow.

(8) Violent fights were seen, the birds remaining grappled for up to five hours, but no serious harm usually resulted.

(9) Copulation occurs in the boxes, with little preliminary display.

(10) Nest-building starts on the day that the pair is formed and continues until the end of incubation. Non-breeders build throughout the summer. The material is stuck down with saliva.

(11) Egg-laying is described. If a clutch is lost, a repeat clutch sometimes follows.

(12) Swifts sometimes eject part or the whole of their clutch. The ejected eggs are sometimes fertile, and the reasons for the habit are obscure.

(13) The parents take an equal share in incubation. The time of each sit varied from 2 to 345 minutes. The eggs were sometimes left uncovered during the day for periods of up to 6½ hours. The influence of weather on the incubation rhythm is obscure.

(14) The parents brood the young by day nearly continuously in the first week and for about half the time in the second week, but very little thereafter.

(15) The feeding parent brings a mass of insects stuck together with saliva. This is normally passed as a single food-ball to one nestling, but with very small nestlings it is divided.

(16) Parent Swifts readily adopt a strange nestling added to, or in place of, their own.

(17) The parents remove some of the fæces, but many others are left in the box. The older nestlings sometimes defæcate from the hole.

(18) The older nestlings exercise their wings vigorously, and have a curious form of "press-up".

(19) Fledging is described. Nearly all the departures were in the morning, and no fledgling returned to its box.

(20) At least in 1951, most of the parent Swifts stayed for several days after the departure of their young.

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STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XL. THE SNOW-BUNTING.

Photographed by

ARTHUR CHRISTIANSEN, BERNARD JEANS, C. PERSSON,
P. O. SWANBERG AND G. K. YEATES.

(Plates 45-51).

As a winter visitor the Snow-Bunting (*Plectrophenax nivalis*) is mainly a coastal bird. As a rule it occurs in some numbers on the north and east coasts, but in most years smaller numbers are also seen in the west and south-west, so that its winter distribution is a good deal wider than that of the Shore-Lark (*Eremophila alpestris*). Inland occurrences are somewhat uncommon, but in recent years several have been recorded at reservoirs and sewage farms in midland and lowland counties, including the London area. More normal winter haunts are the high moorlands of the Pennines (cf. *antea*, vol. xxvii, pp. 153-157), where they feed on the Purple Moor Grass (*Molinia caerulea*) and the gall-midge larvæ which infest it, and the mountains of North Wales and the Lake District. Wintering flocks of Snow-Buntings were at one time a feature of some of the public parks in Edinburgh and we learn from the latest number of the *Edinburgh Bird Bulletin* (Vol. 2, No. 4, p. 45) that flocks were unusually large in Queen's Park during the recent winter when "on many days there were probably between 150 and 200 on the hill". Winter birds in the plumage shown in Plate 51 are often quite inconspicuous on the ground, the females especially showing relatively little white, but the impression of dull coloration is soon dispelled when the birds take to flight as all show some white in the wing, males a good deal more than females. As with the Lapland Bunting (*Calcarius lapponica*) the Snow-Bunting's normal gait is a quick run.

It is not quite clear whether the publication of these plates in our June issue is, or is not, unseasonable. It is certainly true to say that the Snow-Bunting has bred in the higher Cairngorms and in certain mountains beyond the Caledonian Canal; whether it does so regularly is more doubtful. Readers are reminded of the existence of the Rare Birds' Protection Committee of the Scottish Ornithologists' Club (Hon. Sec., P. W. Sandeman, Dalshian, Harelaw Road, Colinton, Edinburgh), which is the appropriate body to receive confidential information on the breeding status of the Snow-Bunting. Scotland is on the southern fringe of the bird's breeding range, and all our plates taken at the nest come from Sweden or Iceland. It is possible that the Snow-Bunting used to breed regularly in Britain but is ceasing to do so as a result of the amelioration in climate.

MID-SEASON MOVEMENTS OF SWIFTS IN SUSSEX.

BY

D. D. HARBER.

IN his article, "The Movements of Swifts in Summer" (*antea*, vol. xlv, pp. 146-152), H. G. Hurrell states that "there is evidence which suggests the possibility of an influx from the Continent about the end of June". My own observations on the Sussex coast during the summers of 1950 and 1951 would appear to indicate that not only does such an influx take place but that movements in both directions across the Channel may be normal in this species during the breeding season, though sometimes on quite a small scale. All movements described below were observed at Langney Point, Sussex, except where otherwise stated. About a quarter of a mile of coast was regularly watched there, but though most of the birds seen crossed this bit of coast (in one direction or the other) this was not the case with all the birds coming in from the sea, some of which, while seen from there over the sea, actually crossed the coast elsewhere. Except in the case of big movements (when, of course, it was impossible to follow the course of each bird) nearly all the birds recorded as coming in from the sea were first picked up with glasses some way out, most being first seen at a great distance as tiny specks, sometimes only visible through a telescope. Likewise nearly all the birds recorded as flying between N. and N.W. were followed inland, through glasses, until lost to sight. Except where otherwise stated the period of observation was normally of about two hours' duration and usually from about 11.00 to 13.00 (B.S.T.).

1950

June 14th. Three flew in together, S.E. to N.W. Wind S.W. On the 13th a cold front from the N.E. had moved S.E. and on the 14th it joined an occlusion which had come up from the S. and this gave widespread rain in England during the night of the 13th and on the 14th, breaking a long spell of mainly dry weather.

June 21st. Two, one and two flew S. out to sea. Wind S.W. This and the next two observations were made during a period of a complex and mainly cyclonic type of pressure distribution which lasted until the 24th, the heaviest rain being on the 20-21st. A drop in temperature on the 21st.

June 22nd. A party of six flew S. out to sea. A strong W. wind. Much the same weather conditions as on the previous day.

June 23rd. One flew in S.E. to N.W. Wind N.W. Pressure high over France.

June 25th. Four, one and one flew in S.E. to N.W. Wind W. On the 24th an anticyclone had developed over France and a S.W. to W. type was established over the British Isles, lasting to the end of the month.

June 28th. One flew S. out to sea and one and two flew in S.E. to N.W. Warm and fine in S.E. and Midlands. Wind W.

June 30th. Two flew S. out to sea and three flew in S.E. to N.W. Wind W. Still warm and fine in S.E. and Midlands.

July 7th. Two flew in S.E. to W., seven, five and two S.E. to N.W. and eight and three S.S.E. to N.N.W. When the last two parties crossed the coast other Swifts, *c.* 20 in all, were seen crossing the coast in much the same direction further to the N.E. Wind N.W. later W. An anticyclone over France with a ridge of high pressure extending northwards across England and intensifying.

1951.

June 12th. 15.30-16.00 (B.S.T.), 22 in all flew S. out to sea. Strong W.S.W. wind. Early on this day a cold front gave thunderstorms and heavy rainfall in S.E. and E. England.

June 22nd. Two and four flew out to sea between S. and S.E. Wind S.S.W. During the night of 21st-22nd a shallow depression spreading from France gave thunderstorms and thundery rain in some S. and Midland areas.

June 23rd. 11.30-13.30, *c.* 500 flew in from between S.S.E. and S.S.W. to between N.N.E. and N.N.W. 14.50-17.20 *c.* 260 flew in likewise. The largest party of the day consisted of *c.* 200. Eight flew E. out to sea. Wind N.N.W., fog in night had mainly lifted. The shallow depression had moved into the North Sea and gave dull, cool weather on this day in the E. and Midlands.

June 24th. 10-15-13.00, 20, 12 and 4 flew in from between S. and S.E. to between N. and N.W. Wind N.W. veering W. 15.15-16.15, 15 in all flew in S.E. to N.W. and a party of about 20 flew E. out to sea. A strong W. wind. Depression still in region of North Sea.

June 26th. 15.30-17.15, *c.* 200, coming from N.N.E., flew out to sea between S. and S.S.W. A party of six flew in from the sea, S.E. to N.W. Strong W. wind. Rain spreading southwards over a considerable area of the British Isles. Depression still in region of North Sea. A fall in temperature.

June 27th. 10-30-13.15, no Swifts seen. Fresh W.S.W. wind. Clear and warmer. Depression filling and moving away, anticyclone spreading from S.W. and intensifying, giving fine weather until end of month.

June 28th. 9.30-10.30, 15 flew in from between S. and S.E. to between N. and N.W. None, 10.30-13.00. Wind N.W.

July 3rd. 16.15-18.15, 12 flew in from between S.E. and E. to between N.W. and W. Strong W. wind. Belt of high pressure still giving fine weather.

July 4th. 10.45-13.00, 13 flew in from between S.E. and E. to between N.W. and W. Strong W. wind. 15.15-18.00, 42 flew in as before. Wind northerly. A cold front reached the S. on this day.

July 11th. Two flew in S.E. to N.W. Wind S.W. A fairly deep depression moving slowly N.E. across Scotland. Rain in all districts.

July 18th. Rye Harbour, Sussex. 15.45-16.45, many hundreds coming in from the S.E. (from over the sea) and going N.W. inland. This movement extended as far as the eye (plus x 12 binoculars) could see on both sides of the mouth of the Rother. Afterwards only a few came in. Wind N.W. with much cloud. An anticyclone had come in from the Atlantic on the 13th-14th and had increased in intensity, giving dry and mostly bright weather in the S.

July 23rd. c. 40 flew in S.E. to N.W. (this record is by A. R. Mead-Briggs). A ridge of high pressure moving over the British Isles.

(The meteorological data above have been obtained from the "Daily Weather Reports" of the Meteorological Office with the exception of the conditions of wind and visibility which were noted at the time).

It is, of course, possible that the July movements given here, or some of them, may have been connected with the autumn emigration. The fact that the birds were coming in from the S.E. and going N.W. inland as in the case of the earlier inward movements in no way disposes of this possibility. For Swifts arrive on the Sussex coast in this way in August when they are undoubtedly emigrating and the *hirundines* on autumn emigration often behave in like manner there.

It will be seen that the above data give little support to the theory of Koskimies (as outlined in H. G. Hurrell's article quoted above) that Swifts endeavour to avoid an advancing depression by flying against the wind round the S.E. side of it. The two large scale movements in particular (June 23rd and June 26th, 1951) do, however, seem to suggest a connexion with unfavourable feeding conditions caused by the passage of a depression. The influx of June 23rd followed the passage of a shallow depression coming from the Continent on the night of June 21st-22nd. One cannot but suspect the outward movement of June 26th to have been, at least in part, a return of birds which came in on the earlier date, presumably in consequence of their finding that the passage of the depression had created similar unfavourable feeding conditions over Britain.

NOTES.

Moustached Warblers in Hampshire.—At about 7 p.m. on August 13th, 1951, Campbell Ballantyne told G. E. Wooldridge of two warblers that he had been watching that morning. Although obviously warblers their identity was puzzling. He gave a fairly full description of the birds seen, the most striking feature being, "very dark brown head with white eyestripe". He had been first attracted by their call, a Stonechat-like "tac-tac" which he considered an unusual note to hear from a reed bed.

We went at once to Eling Great Marsh, Totton, near Southampton, and in the same area of low *spartina*, about two to three feet high, found first one and then two warblers. They moved through the *spartina* just above the ground or water level, occasionally appearing on the tops, particularly preparatory to taking flight when driven to the edge of the small patches. Flights were short, usually to the next nearest patch, twenty to fifty feet away. They flew low, not above five feet, direct, and with little undulation. They almost invariably called after a flight. We watched them for nearly an hour, with good sunlight (though low) behind us, and had good views down to five yards, with 8 x 30, and 12 x 40 binoculars. CB had previously watched them in morning sunlight for approximately two hours.

The following notes were made in the field, with initials where variations between observers occur:—

Size—about Sedge-Warbler (*Acrocephalus schœnobæus*) to which at first sight there was a resemblance. Crown and nape—black, some dark brown at certain angles. Conspicuous white stripe above eye, black stripe from beak through eye, broadening behind eye, dark ear-coverts (ashy-brown CB). Sides of neck light brown (GEW). Mantle—dark brown (with darker marks CB). Back—dark brown, ruddy in some lights, uniform with rump. Tail—grey brown (CB), dark brown (GEW), shortish and rounded, nearly always slightly fanned. Under-parts—from white chin through belly to under tail-coverts gradually becoming greyish-white. Rufous tinge on sides. Wings—darkish-brown (showing light edges to some feathers GEW), lighter edge to closed wing on primaries. Bill—dark tip, pale base; pink (GEW) on under mandible at base (flesh-coloured CB); thin, like Spotted Flycatcher (*Muscicapa striata*) side view (GEW). Eye—dark or black. Legs—dark-flesh or brown (CB); dark (GEW). Note—Stonechat-like "tuc-tuc" (CB). "Tac-tac (pebble-like) sometimes "tac-tac-tac". Also sometimes with a slight churring quality, not with the sharpness of two pebbles.

The two birds made considerable efforts to keep together. They were often seen to flick their tails upwards in the manner of Dartford Warblers (*Sylvia undata*). It was noticeable that in flight the birds appeared much lighter, dark browns apparently lightening and under-parts showing whiter.

G.E.W. had considered when watching the birds, that they could be Moustached Warblers (*Luscinia melanopogon*) but had not realised until checking in *The Handbook* afterwards the rarity of this species. However, our notes seemed so conclusive that we decided that all haste must be made to get other opinions. As it was dusk by then, we planned to visit the location next morning with a view to telephoning other local ornithologists if the birds were still there. We arrived on the marsh before 7 a.m., and made an extensive search without success, and made further searches at intervals throughout that day and the next without seeing the birds again.

The general appearance of these birds did not completely agree with the plate of this species in *The Handbook*, or with Dr. Ennion's painting in *British Birds* (vol. xli, frontispiece). The head most resembled that of the lower bird in *The Handbook* plate, with the dark eye-stripe much more pronounced. The upper-parts were not quite as rufous as in Dr. Ennion's picture. There was also a less extensive rufous area on the sides than in the latter.

We feel, however, that there can be no doubt as to their identity, and this will be the first record of this species in Hampshire. GORDON E. WOOLDRIDGE AND C. B. BALLANTYNE.

[Some doubt has recently been cast on the possibility of making reliable sight identifications of the Moustached Warbler. While such identification undoubtedly calls for the utmost caution and thoroughness we are satisfied that it is not impracticable in favourable conditions with adequately experienced observers. In addition to plumage the field observer can study characters such as the tail-flicking habit and the voice—the former an important detail in the case reported above—which are not available when skins of different species are compared; and even in plumage the trained observer may find differences in the living birds which are not appreciable in the museum. We therefore continue to regard field identification of a Moustached Warbler as practicable and we accept the record.—EDS.].

Great Reed-Warbler in Sussex.—On May 24th, 1951, Mr. O. Holt and I observed a Great Reed-Warbler (*Acrocephalus arundinaceus*) in a reed-bed, in E. Sussex.

The song which first drew our attention, was loud and harsh; it was composed of a series of sharp striking notes, interspersed by loud churring, and a vaguely musical bubbling chatter very much stronger and more voluminous than that of the commoner *Acrocephali*, which were singing competitively near by.

The bird favoured a stretch of comparatively sparse reed growth, with patches of open water and overhanging trees, and its range of movement appeared confined to this area.

It was particularly skulking in its habits, singing almost entirely from the base of the dead reed-stems under the cover of the new growing shoots. On emergence its large size, heavy flight, and spread tail were very noticeable. The flight was of short duration, and it barely rose higher than the reeds; on one occasion only it was observed to alight on the branch of an overhanging tree, but quickly returned to the cover of the reeds.

On the following day I was accompanied by Dr. N. F. Ticehurst and Messrs. W. S. Nevin and D. B. Cooke, when the bird was seen in strong sunlight. In addition to the features mentioned above, the plumage of the upper-parts appeared to be an almost uniform rich brown, slightly more rufous on the rump and tail, and the head noticeably darker, with the merest suggestion of a white stripe over the eye. The under-parts were pale buff to white under the chin. The bill was long, strong, and straight, and the legs dark.

The bird was under observation for three hours, from a distance of approximately 30 yards, with 10 x 50 field glasses.

It may be of interest to add that the bird was almost continually accompanied by a pair of the smaller species (*A. scirpaceus*), which adopted the following behaviour. The male, perched near the top of a reed-stem immediately above the offending bird, sang loudly, whilst the female approached at a lower level with shivering wings!

R. A. W. REYNOLDS.

[The bird was watched by other observers on May 26th and June 2nd. On June 10th it was found independently by E. Giles who also found a second bird present; both were singing, about 70 yards apart. Single birds were seen on June 11th and 14th, after which no song was heard. On July 18th D. D. Harber had good views of a bird of this species in a tree overhanging the same reed-bed, and what was doubtless the same individual was seen in the same locality on July 28th by A. R. Mead-Briggs. Details of these subsequent observations are given in *Sussex Bird Report* for 1951. Mr. G. R. Mountfort has drawn attention (*antea*, vol. xlv, p. 196) to the importance of the *conspicuous creamy eye-stripe* as a field character, a feature brought out well in an accompanying plate. In view of the fact that the bird (or birds) recorded above and the one seen in Kent in 1950 (*antea*, vol. xlv, p. 203) do not seem to have shown this feature we asked Mr. Derek Goodwin to examine skins in the British Museum. He reports: "Most of the skins suggest that the creamy eye-stripe would be conspicuous in life, but in some, especially in a few females, including one May specimen, the eye-stripe is barely discernible in the skin, and 'merest suggestion' would well describe it. Skins certainly give the impression that this character is variable, but it must be remembered that skins seldom show stripes so clearly as the living bird."—EDS.]

Little Shearwater in Caernarvonshire.—On May 7th, 1951, Miss W. Allum and I watched a Little Shearwater (*Puffinus assimilis*) at Aberdaron, Caernarvonshire. When first seen it was a few yards from the beach, swimming near Herring-Gulls (*Larus argentatus*) and Oyster-Catchers (*Haematopus ostralegus*) standing at the water's edge, where its small size was immediately striking. Later it was compared with a Guillemot (*Uria aalge*) some distance further away and I judged it to be no more than two-thirds the size, at most. The face, including the area round the eye and the ear-coverts, was seen to be whitish, giving the bird at certain angles almost a capped appearance.

On May 9th I returned and found the bird still present. This time I was able to observe it for over an hour, under better conditions, at various ranges down to 40 yards from the beach, using a x 40 telescope. The bird was not seen to fly on either occasion, but preened vigorously or rested quietly on the water and sometimes dived for long periods, coming up a considerable distance away. Whilst preening it would sometimes raise itself up and flap its wings vigorously, showing the under-side of both body and wings, and sometimes roll onto one side, showing the whole of the under-parts, and raising one foot over its back.

Guillemots were present on both occasions, though at some distance, and afforded comparison for size. A Black-headed Gull (*Larus ridibundus*) once settled quite near the shearwater which was distinctly shorter than the gull; in fact I judged it to be no more than a foot in length. The following description was noted at the time: Whole of upper-parts blackish with slaty tinge to mantle and back, but wings appearing to be a very deep brown; a narrow patch on the secondaries very slightly paler; face white, tinged grey from the bill, through the lores, encircling the eye and covering the cheeks, ear-coverts and sides of neck, becoming more darkly mottled towards the shoulder; under-parts otherwise white, including axillaries and under tail-coverts, but with slight greyish wash towards edge of wings: tail black. Bill slaty-blue, rather slender, the nostrils just discernible as a thickening at the base, the heavy, hooked-over tip plainly visible; legs and feet apparently all slaty-black; eye dark. The general appearance was slender with a short neck. The wings when raised were narrow, straight—with very little curve at the carpal joint—and pointed; at rest the tips extended beyond the tail.

R. H. RYALL.

Food and habitat of Jack Snipe.—From one to three Jack Snipes (*Limnocryptes minimus*) were found on a playing field in University Park, Nottingham, between November 13th, 1950, and March 15th, 1951. The ground had been drained after a year of inundation and was still damp, with two or three patches of low sedge; these were the birds' haunts. I never failed to flush one from a very localized area (c. 400 sq. ft.), on the edge of one patch which measured c. 50 yards by c. 35 yards. During the

first fortnight of March I examined this 400 sq. ft. area closely and noticed bill marks everywhere. They were of such a nature as to have been made quite obviously by the Jack Snipe, since it was the only bird there, and they appear to indicate a method of feeding unlike that described in *The Handbook*. A glance at the photographs (Plate 52) shows the main features. It would seem that the bird had stood and tapped the ground with slightly opened bill three or four times in an arc, and then probably tapped again in the same way at a little greater distance from its feet. The procedure must have been repeated every step or so.

Mr. A. N. Jones who was with me tried tapping the ground rapidly with his finger and we found that this frequently resulted in the appearance of a few spring-tails (*Collembola*), even from actual bill-holes. This insect was abundant on the sedge itself. If the bird was indeed feeding on these tiny creatures it might explain the single bill-marks which can be seen among the others, each being caused by the snapping-up of a spring-tail. The double holes were usually about $\frac{1}{10}$ " deep, but some of the single ones were up to $\frac{4}{10}$ ". Most bill marks were among the sedges, I found lines of them near by, as far as four feet from cover, and an entirely isolated set of exactly similar marks about 50 yards away on ground that was open apart from a few small and scattered sedge stumps. The surface everywhere was fairly soft, of mossy earth with little or no mud.

Another rather unusual locality for this species was a heath of bracken and heather 200 yards from fresh marshes at Minsmere, Suffolk, from which I flushed a Jack Snipe on April 11th, 1951.

P. W. P. BROWNE.

Marsh-Sandpipers in Sussex.—On April 22nd, 1951, we watched a Marsh-Sandpiper (*Tringa stagnatilis*) at Thorncy, Sussex. We first saw it flying towards us in company with two Spotted Redshanks (*Tringa erythropus*); we were immediately struck by its unfamiliar appearance and we subsequently had a close view of it in flight and later of it feeding at about 100 yards distance. The following notes are summarized from what we wrote down at the time.

In flight the legs projected well beyond the tail, very noticeably more than in the case of the Greenshank (*T. nebularia*). The body was very slim; the wings greyish-brown and unpatterned; the rump and upper surface of the tail white; the forehead was conspicuously white. On the ground the long legs appeared yellowish-green; the bill long, slender and blackish; the underparts white, apart from a little freckling under the chin; the head white, with crown, nape and a stripe behind and through the eye grey-brown; the back grey-brown patterned with what appeared pale edgings to the feathers. In size the over-all length seemed similar to that of a Redshank (*T. totanus*), but the bird was less bulky. The chief impressions were of elegance in attitude and paleness in coloration and that, even for a wader, it was wary.

Possibly the fact that the wind had been in an easterly quarter for several days previously had some bearing on its occurrence. We have not heard that the bird was seen at Thorney before or after April 22nd.

G. DES FORGES, C. W. G. PAULSON.

ON April 29th, 1951, we identified a Marsh-Sandpiper in the Lower Cuckmere Valley, Sussex. First noted when disturbed from the edge of a small pool in a field near the river, the bird flew direct to the border of the Old Channel, some 200 yards away, where it began to feed. It frequently waded in the water, the legs being submerged to their full extent; under these conditions the bird appeared considerably smaller than two Redshanks feeding on muddy ground a few yards away.

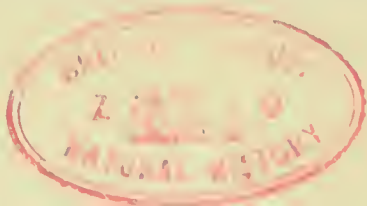
We noted that the bird resembled a Greenshank, but differed from that species in having lighter plumage and proportionately longer legs, as well as a long and finer bill. The mantle and wings were buff-grey in colour and the feathers of the mantle had lighter edges. The crown and nape were pale buff and streaked in appearance. The remainder of the plumage was white except for pale buff markings on the tail feathers and a very pale buff flush on the upper breast. The bill was dull black and the legs were lighter and greyer in colour. In flight the slender build together with the white tail, rump and lower back were most distinctive, as were the long legs projecting well beyond the tail. Flight calls heard were recorded as a subdued "tchic tchic" and a louder, single "wic". The bird was nervous and when disturbed left and did not return to the area. We should mention that L.P.A. has seen birds of this species abroad.

L. P. ALDER AND C. M. JAMES.

REQUESTS FOR INFORMATION.

(1) A number of readers have already reported unusually early arrivals of summer migrants in 1952, especially in March. As a general rule we have regarded records of this sort as being the province of local reports, but such events as the occurrence of a Red-rumped Swallow in Norfolk and the exceptional numbers of various species of migrant Lepidoptera suggest that the early spring of 1952 was quite unusual. No report can be published without the use of records supplied to editors of local reports, and readers are encouraged to send records of arrival dates to them. Readers who are not in touch with a local report or who happen to have made interesting observations outside their normal home area are asked to send records to Mr. I. J. Ferguson-Lees, Fordlands, Crowhurst, Sussex.

(2) 1952 looks like being a "bumper" year for Hoopoes, of which we have received many reports, especially from south-eastern England. Here again, the best procedure is for such reports to be sent to the local editor, but we shall be glad to receive records which, for one reason or another, cannot be sent to a local report.



NOTICE TO CONTRIBUTORS

British Birds accepts papers and notes dealing with original observations on the birds of the British Isles and Western Europe or, where appropriate, on birds of this area as observed in other parts of their range. Review articles on subjects of current ornithological interest will also be considered.

Contributors are asked to observe the following points, attention to which saves the waste of much editorial time on trivial alterations. MSS. if not typed should be clearly written. Authors of papers, especially those containing systematic lists, lists of references, tables, etc., should consult previous papers on similar lines in *British Birds* as a guide to general presentation and set-out, including use of particular type, stops, and other conventions, such as date following the month (January 1st, etc., not 1st January), names of books and journals in italics, not inverted commas, and so on. Capital initial letters are to be used for proper names of definite species: thus "Great Tit", but "flocks of tits." [In systematic lists the whole name should be in capitals.] The scientific name (underlined in MS to indicate italics) follows the English name in brackets without any intervening stop. Scientific nomenclature follows *The Handbook of British Birds* or H. F. Witherby's *Check-List of British Birds* based on this, with the qualification that subspecific names should not be used in connexion with field observations except in cases where subspecies are definitely separable in the field, e.g. Yellow and Blue-headed Wagtails, or where their use is necessary in discussion. When the subspecies name (in cases where this is used) repeats the specific name the initial letter only should be used for the latter; otherwise the whole name should be given in full: thus "*Parus m. major*," but "*Parus major newtoni*."

Notes should be drawn up in as nearly as possible the exact form in which they will be printed with signature in BLOCK CAPITALS, and the writer's address clearly written **on the same sheet**. If more than one note is submitted each should be **on a separate sheet** with signature and address repeated. Though suitable headings and scientific names can be added by the Editor, if necessary, they should be inserted by authors as far as possible. Communications should always be as concise as possible, though reasonable detail can be given where this is important. Notes or records of subsidiary importance may be abbreviated or otherwise modified by the Editor. Maps or graphs must be **neatly** and **boldly** drawn in Indian ink on good quality white paper or Bristol board, with due allowance for reduction when necessary. Authors without experience of making drawings or diagrams for publication are strongly advised to get the help of a skilled draughtsman. Lettering and figures should be inserted lightly in pencil only.

Photographs submitted for inclusion in the series of Studies of species rarely photographed should be sent to G. K. Yeates, Oldstead, High Birstwith, Harrogate, Yorks. Prints should preferably be on glossy paper and should not be smaller than $\frac{1}{2}$ -plate ($6\frac{1}{2}$ -in. x $4\frac{1}{2}$ -in.) ; name of species, locality and photographer's name should be indicated on the back. Photographs to illustrate notes or articles should be sent to the Assistant Editor.

It is desirable that reports of rare birds should be sent in immediately, as sometimes authentication of a noteworthy record may depend on further observation after advice has been obtained. It is also important that such reports should be accompanied by the fullest possible amount of detail in accordance with the suggestions set out in January, 1952 (vol. xlv, pp. 1-2). All notes, records, papers for publication and other editorial communications should be addressed to the *Assistant Editor, British Birds*, Fordlands, Crowhurst, Sussex. Enquiries or requests for information not immediately related to material for publication must be accompanied by a stamped and addressed envelope.

Authors of *papers* receive twenty separate copies free of charge. Any additional separates required must be ordered when returning the proofs and be paid for by the author.

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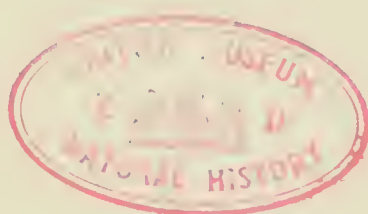
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BLUE-CHEEKED BEE-EATER (*Merops superciliosus*).

SCILLIES, JUNE 22ND, 1951.

From a painting by Roger Tory Peterson

BRITISH BIRDS

NUMBER 7, VOL. XLV, JULY, 1952.

BLUE-CHEEKED BEE-EATER IN SCILLY : A NEW BRITISH BIRD.

MANY of our readers are probably aware that a new species, the Blue-cheeked Bee-eater (*Merops superciliosus*) was added to the British list last year. Publication of the record has been delayed as it was felt that the occasion demanded a coloured plate. We are sure that readers will join us in thanking Mr. Roger Tory Peterson for the plate which appears in this issue and for sparing the time to produce it in the midst of a hurried and very busy visit to this country.

Miss Hilda M. Quick, to whom full credit for the observation is due, sent us a short account of the bird immediately after she had seen it. At our request she has supplied the following details of the occurrence :

" On June 22nd, 1951, having a visitor staying with me on St. Agnes (Isles of Scilly), I went up the lane before breakfast to get the morning's milk. Something skimmed across the path which registered as strange . . . only a glimpse, but it was definitely odd. I wondered if it could have been a Starling looking greener than usual, or a pale Swallow with a light sheen on it (the flight suggested something of the Swallow tribe). However, I had to go back and get breakfast for my guest, and leave the mystery for the moment.

" While we were breakfasting, a neighbour came in to say that Mr. Lewis Hicks had seen a strange and most wonderful bird. So we left breakfast standing and rushed out ; collected Mr. Hicks and went with him to the fields where he had seen it. (He told me afterwards that at first he could not believe his eyes, and went to fetch his wife to ' come and tell me if you see what I see ! ') Fairly soon we saw our quarry afar off, and presently it perched at some distance, but in good view. There was no doubt that it was a bee-eater ; one knew it from pictures, and the curved bill and elongated tail-feathers could be clearly seen. It seemed to be returning fairly regularly to one spot on the telegraph wires, so I stalked gently up the lane to a position within 20 feet or so of where it came back to perch. It made frequent sallies after insects and brought them back to the wire to eat. (' Sitting there eating up my bees as fast as it can ! ' said Mr. Hicks, who has hives . . . but we could not be sure that they were truly bees that it was catching.) Once, its prey escaped from its bill, and it did a lightning dive and turn to re-capture it and bring it back to the wire.

" It seemed to me about the size of a Cuckoo (*Cuculus canorus*) of a most beautiful iridescent green with rather darker primaries. There was a dark copper spot at the throat, a black line through the eye, and the forehead and crown looked pale blue. I noted the

plumage carefully, not because I doubted that it was the European Bee-eater (*Merops apiaster*), but because I was anxious if possible to report its sex and age. When the bird finally changed its hunting ground, after giving me a good exhibition for about ten minutes, I ran home, scribbled down the details, and turned to *The Handbook* . . . to find that the European Bee-eater is russet on head and mantle, with a yellow throat patch, whereas this bird was green all over, with a chestnut throat-patch. A hasty glance at the description of plumage suggested that the juvenile might be greener than an adult. I hurried back again to see more of it. No more close-ups were granted, but we all had excellent views of the bird in flight, when a particularly noticeable feature was the copper colour of the underside of the wing. Against the dark wind-break hedges, the shining green body, with flashes of russet as the wing rose, was very striking. In flight at a distance it was still a recognisable silhouette, rather like a Swallow (*Hirundo rustica*) with the body much prolonged before the forking (as it looked at a distance) of the tail. No sound was ever heard from it. About four hours after it was first seen it disappeared, and a party of bird-watchers, hastily summoned from St. Mary's by 'phone, spent the afternoon searching St. Agnes in vain.

"On sitting down to meditate further on this plumage question, two facts stuck out : one, that if the bird were a juvenile *Merops apiaster*, it had no business to have such complete and conspicuous tail-streamers ; and two, that it was incredible that *The Handbook* should omit all mention of the remarkable copper under-wing, one of the most noticeable of the field characteristics. So I wrote to *British Birds* about it, and was assured, from the description supplied, that the bird was of the species *Merops superciliosus*, the Blue-cheeked Bee-eater."

The Blue-cheeked Bee-eater has occurred as a vagrant in France and Sicily, but Europe is outside its normal range which includes E. Africa and Madagascar (*Merops s. superciliosus*), N.W. Africa (*M. s. chrysocercus*), Egypt, Syria, Iraq and Persia (*M. s. persicus*) and most of the Oriental region (*M. s. philippinus*). This list of races follows J. L. Peters's *Checklist of the Birds of the World* which differs from other recent authorities in recognising only one Oriental race ; this race is often called Blue-tailed Bee-eater and is, in fact, identical with the bird of that name stated to have occurred near Seaton Carew in 1862 (*Handbook*, vol. ii, p. 265). Miss Quick states that the length of the tail-streamers was "as shown in pictures of *Merops apiaster*" and the colour was "like the green of the Scilly sea over white sand on a day of north wind." From this it seems probable the bird which she saw belonged to the Middle Eastern race rather than to the Saharan in which the central tail-feathers are almost twice as long as the others ; but the race cannot be determined with absolute certainty.

Major-General H. P. W. Hutson has published (*Ibis*, 89 : 291-300)

some observations on the migrations of *M. apiaster* and *M. superciliosus* in the Middle East and India. Both species occur on migration in Egypt. When feeding or resting the two species tend to intermingle, though on migration they travel separately in bands of about 20. When the two species are together the golden brown mantle of *M. apiaster* provides a sure means of identification, but in a species of such markedly aerial habits this is not easy to observe. The russet under-wing of *M. superciliosus*, which struck Miss Quick so forcibly, is a good field character; the notes of the two species also differ. On this point Mr. K. E. L. Simmons, who has experience of the two species in Egypt, writes: "The most certain way to tell them apart is by call-note, continually given as the birds fly over. The note of *apiaster* is an attractive, liquid and mellow 'quill(u)p,' only just perceptibly disyllabic; that of *superciliosus* is less attractive, harder in tone and lower in pitch, perhaps more definitely disyllabic—it has been described by van Someren (*Ibis*, 89: 250) as a 'peculiar reeling call-note,' which hardly fits that of *apiaster*. One observer has aptly expressed the difference in tone and quality between the two calls as that between a soprano (*apiaster*) and a contralto (*superciliosus*)."

REPORTS FROM BIRD OBSERVATORIES, 1951.

ONCE more we are indebted to those in charge of the Bird Observatories for a series of reports on their work. This year we are glad to include reports from Monks' House on the Northumberland coast and from Jersey, where new Observatories have been opened. We also have a report from Great Saltee, where experimental work has been in progress with a view to establishing the first Irish Observatory, but this, along with the Lundy report, has to be held over till September owing to pressure of space. Some of the reports on migration will also appear then. The extension of the chain of Observatories has undoubtedly added to the interest of the work and we welcome the fresh developments, completed or in prospect. It is obviously desirable to maintain a steady supply of observers to man the Observatories, and we urge those of our readers who have not already done so, especially the younger ones, to take advantage of the facilities offered. Observers without previous experience would do well to visit first one of the Observatories, such as Fair Isle, Monks' House, Skokholm and Lundy, where a resident warden can help them to acquire correct techniques. In this way it might be possible to maintain a supply of trained workers to man the other stations which rely on a succession of visitors to carry on the work without the advice of a permanent resident.

We must stress that in the space available it is not possible to do full justice to the work of the Observatories; still less can we hope to convey adequately the thrill and fascination of this work, which we must leave to readers to deduce for themselves. The reports follow the lines of those published last year (*antea*, vol. xlv, pp. 223-245); that is to say the more unusual migrants seen at each Observatory are listed first and there follow summaries of the movements of selected common species compiled from the records of all the Observatories. This year these summaries are confined to spring movements, as a special article dealing with autumn movements is in preparation. This will cover the heavy movement of Robins and other small passerines on or about October 1st, 1951, and will not be confined to observations made in Britain.

Since so much correlation is being undertaken by others we will confine ourselves to drawing attention to the records of Red-headed Bunting. No less than three are reported from Observatories in 1951, and a fourth was reported at Stonehaven, Kincardineshire, on May 29th, 1951 (*Scot. Nat.*, 63 : 128-129). It is stated that this bird "showed not the slightest sign of having been in captivity, at least since it last moulted," but we feel that none of the 1951 records—double all previous British occurrences—is entirely above suspicion. Some Red-headed Buntings, imported by a London dealer escaped from captivity in March, 1951, one being brought to the London Zoo (*Avic. Mag.*, 57 : 110). Several others were reported in the London area in 1951, and there have been one or two further records in 1952. One was also reported to us from Brighton, Sussex, in April, 1951. In view of this unfortunate occurrence it seems best to place records of this species in square brackets.

FAIR ISLE BIRD OBSERVATORY, 1951.

THE records published below, in the main confined to the rare or unusual species, have been abstracted from the five issues of the *Fair Isle Bird Observatory Bulletin*, published in 1951. Our selection of material follows our current practice in these reports but it does less than justice to the *Bulletin* which covers a wide range of subjects. Not only is current news given on migration at Fair Isle, but the Fair Isle records are often compared with those from other Observatories or observation points elsewhere, both in the British Isles and abroad. Thus some of the records mentioned elsewhere in this series of reports were known to readers of the *Bulletin* many months ago. In addition there are reports on breeding species such as Arctic Skua, on weights of migrants and on ectoparasites, as well as a good deal of information on measurements, etc., obtained by examining birds in the hand. This should prove invaluable to all Observatory workers and we encourage our readers to become "Friends of Fair Isle" for one guinea per

annum, which will enable them to receive the *Bulletin*, a cyclo-styled magazine, free of charge.

ROSE-COLOURED PASTOR (*Pastor roseus*).

An adult on July 2nd and an immature on September 3rd, both consorting with Starlings (*Sturnus vulgaris*).

HAWFINCH (*Coccothraustes coccothraustes*).

One, probably a male, on January 9th ; male on June 17th and 19th. These are the fifth and sixth occurrences for Fair Isle.

GREATER REDPOLL (*Carduelis flammea rostrata* or *islandica*).

Two from September 19th to October 2nd.

NORTHERN BULLFINCH (*Pyrrhula p. pyrrhula*).

Two, probably this race, November 8th and 12th.

SCARLET GROSBEAK (*Carpodacus erythrinus*).

Female or young birds on August 27th and 31st and September 13th ; one September 22nd, three together September 23rd to 24th, single birds September 26th, 30th and October 2nd.

YELLOWHAMMER (*Emberiza citrinella*).

A male trapped on April 28th was compared with skins in the laboratory and was considered to be an example of the typical race *E. c. citrinella*. It has been stated (*Ibis*, 93 : 297) that there is no evidence that this race occurs in Britain, it having been recently agreed (*Ibis*, 92 : 133) that British breeding birds are separable as *E. c. nebulosa*.

BLACK-HEADED BUNTING (*Emberiza melanocephala*).

A female was watched by a number of observers on the morning of September 13th. The following account is taken from the *Bulletin*, number 4, pp. 21-22 : " The general impression was of a large palè bunting bigger than either sparrow or Grosbeak, and approaching Corn-Bunting (*E. calandra*) in its size and bulky appearance, the latter due to a habit of perching with the head sunk into the shoulders. The head and mantle were pale brown streaked with darker brown. A noticeable feature was the large dark eye contrasting with the paler lores ; the prominence of this character was as strongly marked as in a female Black-headed Bunting watched by M. F. M. Meiklejohn on the Isle of May in September, 1949. The ear-coverts were darker brown than the lores. Good views were had of the rump and upper tail-coverts which were buff with a rusty tinge contrasting markedly with the duller mantle plumage. One observer likened the rump colour to that of the ripening corn. The wing-coverts appeared to be the same dull brown as the mantle, and the major-coverts and tertials showed buffish fringes and tips. The remiges and the rectrices were blackish brown and the latter showed no white, but the outer tail-feathers appeared to be paler brown than the rest. The under-parts were a uniform greyish white with a slight yellowish suffusion in certain lights ; the under tail-coverts were noted as ' lighter in colour ' by one observer, but none of the observers recorded any yellow in this region. The bill was massive and steely grey and the legs were pinkish flesh.

"It looked decidedly larger and heavier than a Red-headed Bunting which had been on the island less than four weeks previously; it also adopted a more thick-set posture on perching whilst the 'tchup' call-note was quite different from the sharper, higher pitched 'twip' of the Red-headed Bunting."

[RED-HEADED BUNTING (*Emberiza bruniceps*).

A male was identified on August 8th and was trapped and ringed on August 12th. It may have arrived as early as the 4th and was last seen on the 21st. A full description of this bird is given in *Scot. Nat.* (63 : 185-186) and in the *Bulletin*, number 3, pp. 34-35.]
YELLOW-BREASTED BUNTING (*Emberiza aureola*).

An adult male in splendid plumage on July 13th (*vide Scot. Nat.* 63 : 186-187).

ORTOLAN (*Emberiza hortulanus*).

One, August 27th; three, August 28th to September 3rd, and an additional bird September 1st; two, September 5th; one, September 26th.

LITTLE BUNTING (*Emberiza pusilla*).

A male on May 18th.

LAPLAND BUNTING (*Calcarius lapponicus*).

A male on April 26th; five arrived on September 6th; 15 on September 7th; 18 on September 8th and 15th; one or two daily, October 3rd to 8th; one, October 30th; one, November 23rd.

WOOD-LARK (*Lullula arborea*).

One October 11th; two, October 12th; one, October 16th; two, October 20th; one, October 31st to November 2nd and November 12th.

RICHARD'S PIPIT (*Anthus richardi*).

James Stout found one with an injured wing on November 14th and saw at least four others on the island that day. He skinned the injured bird and it is now in the Royal Scottish Museum. The legs are described as dull flesh-colour, tinged brown on the front, and the upper mandible as pale yellowish brown with a darker tinge.

TAWNY PIPIT (*Anthus campestris*).

One, first seen on September 15th, was "shepherded" into a clap net on September 17th. An account of this is given in *Bulletin*, number 4, pp. 23-25, from which we extract the following: "in the field it was a strikingly pale pipit, of Rock-Pipit size, but with a more horizontal bearing; indeed its carriage as it ran swiftly over the short grass, reminded us forcibly of the close affinity of the pipits and wagtails, an impression which was enhanced when the bird, alighting after short flights, flicked the tail up and down two or three times in characteristic wagtail fashion.

"The upper-parts were pale brown with a greenish olive cast, the head and nape appearing greyer. The head and back were faintly streaked, the wings were pale brown, the secondaries, tertials and greater coverts having buffish white fringes. The median coverts were darker and presented the appearance of a blackish

brown wing-bar and these feathers were tipped with buffish white. There was a noticeable black line above the eye contrasting with a pale eye-stripe; the ear-coverts were greenish olive and there were white moustachial streaks bordered by dark lines; the throat was white, the breast vinous-buff faintly streaked at the sides, the belly and vent whitish and unstreaked. The long tail appeared to have white outer feathers when seen in the field, but these proved to be buffish white when the bird was examined in the hand.

"On the 15th a somewhat lark-like chirrup was heard, but on the 17th the only note heard was a soft 'tee up' sometimes repeated as the bird made short flights. The note was fuller and lacked the squeaky quality of that of the commoner pipits; the flight was undulating and rather wagtail-like.

"When examined in the hand the bird proved to be a first winter juvenile and the bill is described as pinkish flesh on lower mandible and cutting edges, dark horn on culmen and at tip; legs flesh coloured."

PETCHORA PIPIT (*Anthus gustavi*).

James Wilson who has previous experience of this species at Fair Isle reported one on October 2nd.

GREAT GREY SHRIKE (*Lanius excubitor*).

Singly on October 6th and 13th.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

One on September 26th.

WOOD-WARBLER (*Phylloscopus sibilatrix*).

A specimen with abnormally short wing and tail and atypical wing formula was caught on September 7th; another bird found dead on September 12th.

EVERSMANN'S WARBLER (*Phylloscopus borealis*).

One, believed to be a bird of the year, on August 27th.

YELLOW-BROWED WARBLER (*Phylloscopus inornatus*).

One, September 28th; two, September 30th; one, October 1st and 2nd; four each day to October 5th; one on October 6th.

REED-WARBLER (*Acrocephalus scirpaceus*).

A first-winter bird trapped on September 9th, and one on September 24th.

ICTERINE WARBLER (*Hippolais icterina*).

An adult from August 25th to 28th, and first-winter birds on September 2nd and 5th, all trapped.

BARRED WARBLER (*Sylvia nisoria*).

Three (one trapped) on August 25th; two on August 26th; one on 27th; another trapped on September 1st.

SUBALPINE WARBLER (*Sylvia cantillans*).

See page 260.

BLACK-EARED WHEATEAR (*Enanthe hispanica*).

A first year male of the black-throated form was seen on November 8th, 9th and 13th. This is the second record for Fair Isle and the first November record for the British Isles.

RED-SPOTTED BLUETHROAT (*Luscinia s. svecica*).

Three on May 20th and four on 21st ; a male, May 25th and 26th ; female May 30th ; one, June 13th ; three, September 1st ; two, September 2nd and 6th ; one, September 23rd to 28th.

ROBIN (*Erithacus rubecula*).

A bird caught on May 25th proved to be the second spring example of the British race *E. r. melophilus* on the island.

BLACK-BELLIED DIPPER (*Cinclus c. cinclus*).

One on November 18th, remaining five weeks in the island. A spring record will be noticed later.

GREAT SPOTTED WOODPECKER (*Dryobates major*).

One, October 2nd to 3rd.

WRYNECK (*Jynx torquilla*).

Three trapped August 28th, August 30th and September 1st.

GREY LAG GOOSE (*Anser anser*).

The presence of a party of four from June 30th to July 3rd is stated to be "an unprecedented occurrence."

GREENLAND WHITE-FRONTED GOOSE (*Anser albifrons flavirostris*).

A White-fronted Goose shot by Jerome Stout on September 15th proved to belong to the Greenland race, the first record for the island.

THE ISLE OF MAY, 1951.

BY

A. G. S. BRYSON

THE more unusual species recorded at the Isle of May in 1951 included :—

ORTOLAN (*Emberiza hortulana*).

One, May 1st and 2nd ; one, October 14th.

WOOD-LARK (*Lullula arborea*).

One, October 12th and 14th.

SHORE-LARK (*Eremophila alpestris*).

One, October 2nd ; two, October 3rd ; one, 4th and 6th ; two, 7th ; one, 8th ; one, 15th.

GREAT GREY SHRIKE (*Lanius excubitor*).

One, October 12th and 13th.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

Three, October 1st ; one, October 2nd to 7th.

YELLOW-BROWED WARBLER (*Phylloscopus inornatus*).

One, October 11th.

GRASSHOPPER-WARBLER (*Locustella naevia*).

One, May 17th ; one, May 24th.

ICTERINE WARBLER (*Hippolais icterina*).

One, August 8th to 10th ; one, September 1st to 4th.

BARRED WARBLER (*Sylvia nisoria*).

One, October 6th to 8th.

NIGHTINGALE (*Luscinia megarhyncha*).

One, April 30th and May 1st.

HOOPOE (*Upupa epops*).

One, May 1st and 2nd.

WRYNECK (*Jynx torquilla*).

One, May 1st ; two, May 2nd and 3rd.

GREEN SANDPIPER (*Tringa ochropus*).

One, August 8th.

MONKS' HOUSE BIRD ORSERVATORY, 1951.

BY

DR. E. A. R. ENNION

MONKS' HOUSE OBSERVATORY commenced its first season's trapping towards the end of April, 1951, after a winter spent in alterations and equipment to provide living and working quarters for the Director and Mrs. Ennion, and for up to a full complement of about 25 visitors. It is therefore a rather more permanent establishment than are many of its fellow Observatories and, in its first year, has welcomed some 500 visitors, most, but not all, ornithologists. Four Bird Courses, each lasting a fortnight, have been held, together with a number of "ringing instruction weeks"; also many Courses in marine and other branches of outdoor biology at times when bird activities are less to the fore. The Observatory is thus able to cover a wide field and to pursue its recording and ringing throughout the year, especially in winter when about 1,000 birds of 25 spp. (including 450 Greenfinches and 250 Linnets) were trapped between autumn and spring passages, 1951-52. The proportion of Greenfinches re-trapped in stackyards and roosts suggests that at least half of the local population of these birds has been ringed: we have barely touched the Linnets! Summaries of work in progress were published in leaflets issued in November and March—copies of the latter, current, leaflet, containing also details of accommodation, etc., and plans for the autumn and winter of 1952-53 may be obtained from the Director, Monks' House, Seahouses, Northumberland. Many of the Observatory's records are incorporated in the *Ornithological Reports of the N.H.S. of Northumberland, Durham and Newcastle-on-Tyne* and in the *Farne Islands Reports*, obtainable from the Hancock Museum, Newcastle-upon-Tyne. Close links connect both of these local bodies with Monks' House.

The present Report covers the autumn passage of 1951, a period far less cold and wet here on the north Northumberland coast than in most parts of the country—indeed, dry, sunny weather predominated throughout September and in October when, at intervals during the month, easterly winds brought us our main arrivals of winter migrants. West winds prevail here: those from other quarters, although they may be stronger and accompanied by unsettled weather, are usually short-lived and—except for easterly winds—are associated with coastal movements. An easterly shift with anti-cyclonic conditions over the North Sea appears to favour direct immigration.

Examples of coastal movements include a steady "dribble" of Blue Tits (*Parus cæruleus*), with a few Great (*P. major*) and Coal-Tits (*P. ater*), travelling south, in small parties of three or four to nine or ten, along the dunes and fields immediately inland during the forenoons of October 4th to 9th; and the south-bound passage of successive parties of 50 to 150 Meadow-Pipits (*Anthus pratensis*) between 06.00 and 11.30 hours on September 15th, when 2,500 to 3,000 pipits passed within sight of the Observatory. An example of immigration is the arrival of two obviously greyish Song-Thrushes (*Turdus ericetorum*) from over sea, which settled on a beach trap to preen, and presently to feed, on November 12th. From October 2nd to 5th many Song-Thrushes were present, heavily spotted and extremely dark above, which frequented wet reedy "snipe meadows" rather than dunes and gardens. One would like to know their origin and whether other Observatories handled any of these swarthy Song-Thrushes at the beginning of October*. Redwings (*T. musicus*), a few Fieldfares (*T. pilaris*) and many Blackbirds (*T. merula*) were arriving at the same time, although the main movements of these three species occurred later in the month and in November, October 29th being a spectacular day when 17 Blackbirds and two Redwings were taken at dawn in the first drive of the Heligoland trap. The only comparable occasion was the great influx of Robins (*Erithacus rubecula*) and other small passerines on October 4th and 5th.

The earlier breeding of Wheatear (*Enanthe enanthe*) as compared with Whinchat (*Saxicola rubetra*) was reflected in the catches of these two species: 20 in July (ten on July 23rd) and 16 in August out of a total of 39 Wheatears; four in July and 28 in August out of a total of 42 Whinchats. Corresponding figures stress a similar state of affairs for Meadow- as against the somewhat later breeding Rock-Pipits (*Anthus spinoletta petrosus*): for the period July to November monthly totals were, for Meadow-Pipit 16, 24, 38, 16, 2; and for Rock-Pipit 11, 6, 3, 18, 8. Whitethroats (*Sylvia communis*), Willow-Warblers (*Phylloscopus trochilus*) and Sedge-Warblers (*Acrocephalus schænobæus*) were taken in fair numbers in August and September; two Garden-Warblers (*Sylvia borin*) on June 28th are difficult to account for as none breed in the vicinity; and still more remarkable is the capture of an adult male Pallas's Willow-Warbler (*Phylloscopus proregulus*) on October 13th, of which full details appear elsewhere. The only other unusual captures were four Ruffs/Reeves (*Philomachus pugnax*) in August, as many as 23 being present at one period on a small pool opposite the Observatory; a Wood-Sandpiper (*Tringa glareola*); and a Sanderling (*Crocethia alba*) taken by the somewhat unconventional method of

* A reference to "noticeably dark (but apparently small) thrushes of problematical origin" will be found in *The Handbook*, vol. ii, p. 119. P. A. Clancey suggests (*Ibis*, 90: 112-115) that these birds belong to a race breeding "probably throughout the greater part of the mainland of Scotland, except the south-east," to which he has given the name *T. e. catherinæ*; but the late H. F. Witherby did not admit this race (*Handbook*, v., p. 119).

cycling beside it along the tideline and dropping a coat over it !

During the autumn, as at all other times, the experimental and long term projects of the Observatory are carried on as time and suitable visiting personnel permit. The former is concerned mainly with trying out and making new traps and devices of various kinds, including baits, and with improving old and developing new methods. The latter include the investigation of bird food and feeding habits, and two special surveys : an " at home " survey of the local pipit and bunting distribution throughout the year and an " away " survey of a valley on the eastern edge of the Cheviots, which appears to hold an exceptionally rich and interesting flora and fauna. Another project, in conjunction with the N.H.S. of Northumberland, Durham and Newcastle-on-Tyne, is the colour ringing of Rock-Pipits on the various islands of the Farne group, to determine to what extent they interchange between islands and between islands and mainland. It is expected that some provision will soon be made to enable serious ornithological studies to be undertaken on at least some of the Farne Islands.

THE SPURN BIRD OBSERVATORY, 1951.

BY

G. H. AINSWORTH AND RALPH CHISLETT

BIRDS ringed in the year to October 31st, 1951, covered 64 species and numbered 3,514. Only in one previous year had the number exceeded 2,000 (1949—2,126). This large increase was due to the provision of additional Heligoland-type traps, and to the devotion with which they were served almost continuously throughout both migration seasons. The smaller portable traps also contributed, particularly during periods when migration was quiet, and in the winter months.

More than 80 people stayed at the cottage for periods varying from short week-ends to several weeks. Many people paid several visits. Although members and associates of the Yorkshire N.U. predominated, help was welcomed by people from other areas, including Sweden and South Africa. A mainly London party was fortunate to hit upon the busiest week of the year in early October, and worked very hard.

The new traps were expensive to build ; but donations came from several sources. One of the new traps is double-ended, each wide entrance converging to the same trapping-box, so that birds can be driven from north and south in turn, and birds that may have passed outside one entrance may possibly be caught by a drive from the opposite direction. This trap was not completed until late June ; and whether the southward-facing end will prove more useful during the spring movement remains to be seen.

Increased numbers of birds ringed mean increased recoveries, the more remarkable of which are referred to in the following list of interesting occurrences :—

GREENFINCH (*Chloris chloris*).

A bird recovered near Loftus in the North Riding on 17/6/51, that had been ringed at Spurn on 15/10/49, added a little to the existing evidence of coastal movement.

LINNET (*Carduelis cannabina*).

Numerous birds were caught that had been ringed in 1949 and 1950. A juvenile male ringed on 25/4/51 was recovered in France (La Rèole, Gironde) on 7/11/51.

SHORE-LARK (*Eremophila alpestris*).

A few birds occurred from October 18th to November 2nd, and were readily approachable.

MEADOW-PIPIT (*Anthus pratensis*).

One ringed Spurn on 26/7/51 was recovered at Jerez de la Frontera, Cadiz, Spain, on 28/11/51.

GREAT GREY SHRIKE (*Lanius excubitor*).

Several birds occurred from October 3rd to 14th, including three on the 3rd.

RED-BACKED SHRIKE (*Lanius collurio*).

Occurred from May 12th to 15th, and from September 9th to October 5th.

PIED FLYCATCHER (*Muscicapa hypoleuca*).

Birds occurred on both spring and autumn passage, with much the largest number present in the evening of August 24th (c. 200). A bird ringed 21/8/51 was near Braganza, North Portugal, on 12/9/51.

ICTERINE WARBLER (*Hippolais icterina*).

J. R. Mather, G. Harrison and D. B. Iles caught a bird on September 3rd with a total length of 152 mm., and the typical yellow under-parts, and broad bill bristled at base.

SONG-THRUSH (*Turdus ericetorum*).

Autumnal passage birds were unusually numerous. Birds ringed on 9/10/49, 10/11/51 were recovered in France respectively on 4/11/51, at Beynes (Seine et Oise); and on 18/11/51 at Moncaut, near Agen (Lot et Garonne). A third bird ringed 18/10/51 was at Sondica, Vizcaya, Spain, on 26/10/51—again only eight days after being ringed at Spurn.

BLACKBIRD (*Turdus merula*).

Two more were added to the records bearing on the origins of our autumnal migrants: Ringed 31/10/47, recovered 6/4/51 at Meldorf, Schleswig-Holstein; and ringed 29/10/49, recovered 23/1/51 at Vejle, Jutland.

BLACK REDSTART (*Phoenicurus ochrurus*).

A bird caught on October 27th, 1951, which had been ringed on July 15th, 1951, as a young bird at Halle, Saxon-Anhalt, Germany, provided the first bit of evidence we have had of the origin of the Black Redstarts that occur with some regularity in spring and autumn.

BLUETHROAT (*Luscinia svecica*).

Three occurred during the first week of October, and one was

ringed. The observers did not think it possible to determine from juvenile plumage whether *svecica* or *cyaneacula* but there can be little doubt that the birds were Red-spotted Bluethroats.

ROBIN (*Erithacus rubecula*).

This year the annual Robin immigration occurred from October 1st, and large numbers were present for a week afterwards, tapering until only a few remained in mid-October. Numbers were larger than in any year since 1945. In some years two waves occur but there was only one in 1951, and the date was earlier than average. Numerical comparisons with previous major waves are not easy. In 1892 J. Cordeaux (*Naturalist*, 1893, p. 9) recorded "thousands" and "counted up to fifty in one part of the Warren House Garden"—an "invasion" probably at least as large as that of 1951. The phenomenon was known even then to be an annual feature varying as to numbers and date.

A Robin ringed 23/10/49 was recovered at Seaterstoä, central Norway, on 7/4/51. A bird ringed 1/10/51 was recovered at Piombino on the Italian coast some forty miles south of Leghorn on 12/11/51. This latter bird gives food for conjecture. Had westward drift brought it and its congeners to Spurn as they flew southwards? Was its appearance at Piombino indicative of re-direction of flight to north Italy, and then southward down the Italian coast? As some 600 Robins were ringed in that week, there may be other exciting recoveries.

WRYNECK (*Jynx torquilla*).

Birds were recorded on April 24th and 25th, and on May 10th and 11th. Two were ringed.

CUCKOO (*Cuculus canorus*).

A bird ringed 16/5/49 was recovered near Souk-el-Arba, Tunisia, on 17/4/51. Another ringed 6/6/49 was retrapped at Spurn on 22/5/51.

SPOONBILL (*Platalea leucorodia*).

Ten Spoonbills flew over the cottage on May 24th. One was watched at leisure as it waded among Great Black-backed Gulls (*Larus marinus*) in the Estuary on July 15th and was seen on subsequent days. Three birds seen in flight on September 17th were thought to be Spoonbills.

SHELD-DUCK (*Tadorna tadorna*).

Parties of birds totalling c. 260 came down Humber in formation on July 15th and passed seaward; presumably on moult-migration. Smaller parties came and passed the same way on July 24th, 25th and 31st.

DOTTEREL (*Eudromias morinellus*).

A Dotterel remained about the Chalk Bank area for some days from August 26th.

BLACK TERN (*Chilidonias niger*).

Black Terns occurred on July 22nd, 26th, August 7th, and one on September 16th.

GLAUCOUS GULL (*Larus hyperboreus*).

A partially decomposed bird found by R. F. Dickens on the Humber shore on February 20th was judged to be a fourth-winter bird.

Among the many other species seen by visitors may be mentioned the Stonechat, Nightingale, Peregrine Falcon on several days, three species of harrier, an Osprey, divers, Great Skuas in August and September, many Arctic Skuas, Water-Rail, and waders in variety and quantity. Fuller details may be found in the Annual Ornithological Report of the Yorkshire Naturalists Union, published in *The Naturalist* and obtainable separately, priced 2/-, from either of the writers*, who look forward to another good year in 1952, for which early bookings are advised.

*Ralph Chislett, Brookside, Masham, near Ripon, Yorks. G. H. Ainsworth, 144, Gillshill, Road, Hull, E. Yorks.

GIBRALTAR POINT OBSERVATORY, 1951.

BY

A. E. SMITH AND R. K. CORNWALLIS

THE first five months of 1951 were on the whole very unsettled and abnormally wet. Little migration was observed until the fourth week of March when there was considerable movement of Chaffinches and other species. Apart from an anticyclonic spell from about 16th to 25th, April was cold and wet and, although there was a fair variety of migrants, numbers were small. May was also cool with excessive cloud and rain and predominant north-easterly winds. Passage was comparatively slight until the fourth week, but, from then until the second week of June, hirundines, Swifts, Turtle-Doves and various wader species were moving in larger numbers. The usual big summer movements of Swifts were observed at intervals between mid-June and mid-July, at least 5,000 being reliably estimated on June 17th. Large numbers of waders and terns were present as usual during August, but passerine migration was on a small scale during the month, which was mainly unsettled. Similar weather prevailed during most of September, but anticyclonic conditions from 6th to 10th and from about 18th to 22nd gave two fine spells. On the 1st, when pressure was high over Scandinavia, there was an early morning "rush" of passerines of several species, principally Willow-Warblers and Whitethroats. During the first of the fine spells, which was characterized by light, north-easterly winds, there was a small but interesting movement of passerines on 6th and 8th when, among other species, two Red-breasted Flycatchers, an Icterine and a Barred Warbler appeared. On 19th with light westerly winds there was an immense passage of Swallows and House-Martins, at least 7,000 of each species being estimated, all during the morning. The great invasion of Robins and other species which occurred during the first few days of October, to be

described in detail elsewhere in this journal, was the most impressive movement of birds so far experienced at Gibraltar Point. Movement of Robins was greatest on October 1st and 2nd, of Goldcrests, Song-Thrushes and various other species on 3rd and 4th. Pressure remained high over Scandinavia and eastern England until 14th, with mainly south-easterly winds. During this period there was a strong southerly movement of Starlings, Linnets, Chaffinches, Meadow-Pipits, Sky-Larks and several other species. During the afternoon and evening of the 12th there was another large influx of Song-Thrushes and Redwings. More fine anticyclonic weather with easterly winds prevailed from 23rd to 29th and there was considerable migration of many species, including Hooded and Carrion Crows, Starlings, various finches, Sky-Larks, Fieldfares and Redwings.

The following records may be of particular interest :—

CORN-BUNTING (*Emberiza calandra*).

As in 1949 and 1950, small parties of Corn-Buntings (maximum 24) were moving in late May and early June.

WOOD-LARK (*Lullula arborea*).

Five recorded singly between March 22nd and April 21st. One on October 11th, the first autumn record for the Observatory.

SHORE-LARK (*Eremophila alpestris*).

Two on January 4th and two flying south-west on March 31st. In autumn, one on October 2nd during the great rush of migrants. Party of 10 to 12 resident in the area from fourth week November onwards.

GREY WAGTAIL (*Motacilla cinerea*).

Six seen flying south-west between October 6th and November 7th. More numerous than in previous years.

WILLOW-TIT (*Parus atricapillus*).

One trapped and examined on September 20th.

GREAT GREY SHRIKE (*Lanius excubitor*).

An adult male on October 9th. Another bird was seen on October 11th.

RED-BACKED SHRIKE (*Lanius collurio*).

A male on May 17th, the first record for the Observatory.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

Two on the afternoon of September 8th. One of these, which was trapped, was a juvenile.

ICTERINE WARBLER (*Hippolais icterina*).

One which appeared on the afternoon of September 6th was trapped the following morning. Identity was established by plumage characters, including pale yellow underparts, and by wing formula and measurements. It appeared to be a juvenile. It was the first record for the Observatory.

BARRED WARBLER (*Sylvia nisoria*)

A juvenile was trapped on September 8th. It was also the first record for the Observatory.

RING-OUZEL (*Turdus torquatus*).

A male on April 17th and another on May 7th. Main autumn movement on October 2nd and 3rd when a peak of at least 30 was recorded. During the evening of 3rd a party of 14 was seen to rise from buckthorn scrub near the Observatory and circle high above the salt-marsh, the birds calling occasionally. Others rose from the bushes to join them until the number had increased to at least 24. They rose to a height of over 2000 feet and were lost to view. Only three were seen on the following day. There was a late bird on October 29th.

ROBIN (*Erithacus rubecula*).

After the great "rush" of Robins in the first few days of October had subsided, 20 to 30 remained in the trapping-hollow from October 7th to 16th. These birds were reluctant to move and showed signs of taking up territory. A certain amount of aggressiveness was noticed and song was heard on one or two occasions. With a change from easterly to north-westerly winds on October 16th all departed suddenly.

KESTREL (*Falco tinnunculus*).

Passage movement to the south during third week of September when four to seven were seen on four days, and again in first week of October when up to four were seen on five days.

COMMON BUZZARD (*Buteo buteo*).

During the period of heavy migration in early October one flew low over the headland on 3rd. There was another possible buzzard on 2nd, but identification was not confirmed.

LITTLE RINGED PLOVER (*Charadrius dubius*).

Two were feeding with Ringed Plovers on the salt-marsh near the Observatory on April 30th. One of these caught in a clap-net was a female. The birds were constantly together and were thought to have been a pair. This was the first record for the Observatory.

STONE-CURLEW (*Burhinus oedipnemus*).

One on the dunes on July 24th.

BLACK TERN (*Chlidonias niger*).

One on August 12th, two on 29th and 31st and one on 30th. Three on September 1st, five on 5th and one on 9th, all with flocks of other terns on the shore. One on October 21st flying south-west over the sea into a half-gale.

LITTLE GULL (*Larus minutus*).

Five autumn records of single birds on July 29th, August 31st, September 8th, 9th and 13th, all with flocks of terns on the shore.

The Observatory was manned for several weeks during April, May and June and almost continuously from the beginning of August to the end of October. The work was again concentrated on the daily recording of migration and weather conditions and on the trapping, examination and ringing of migrants. 147 species were seen during the year, seven being recorded by the Observatory for the first time. 1,162 birds of 63 species were ringed. Ectoparasites

collected from trapped birds were identified by Mr. G. B. Thompson. A fuller report of the year's work may be found in the *Annual Report of the Gibraltar Point Bird Observatory and Field Research Station* which is published by the Lincolnshire Naturalists' Trust at 2/6. This Report (and that for 1950 at 2/-) is obtainable from R. K. Cornwallis at Bleasby Grange, Legsby, Market Rasen, Lincs., to whom enquiries concerning records and research should also be addressed. Enquiries about accommodation and general correspondence should be sent to A. E. Smith at 51, West Street, Alford, Lincs.

CLEY BIRD OBSERVATORY.

CONDENSED NOTES ON SELECTED SPECIES, 1951.

BY

R. A. RICHARDSON

ALTHOUGH the Observatory was visited by the Warden or two or three local assistants at least once each day throughout 1951, business and other duties seriously affected systematic recording during several periods in spring and autumn. Now that sleeping accommodation and cooking facilities for two male observers are available it is hoped to maintain daily recording of bird movements and weather conditions.

A brief report of the year's activities, including a list of birds ringed and a selection of recoveries is published in *Wild Bird Protection in Norfolk*, 1951, price 2/6, obtainable from Miss C. E. Gay, Norfolk Naturalists' Trust, Assembly House, Norwich.

The following list of the more interesting occurrences is compiled from Observatory records and incorporates notes submitted by visitors to the district. These are too numerous to mention individually but their help is much appreciated.

Accommodation can be booked by application to the Warden, Hill-Top, Cley, Holt, Norfolk.

STARLING (*Sturnus vulgaris*).

Heaviest immigration of the autumn took place during the third week of October. A bird ringed in December, 1950, was caught at its nest in Schleswig-Holstein in May, 1951.

ORTOLAN (*Emberiza hortulana*).

An adult male on Blakeney Point on September 7th and another bird, probably immature, there on the 21st.

[LITTLE BUNTING (*Emberiza pusilla*).

A bird, believed to be of this species, reported on September 20th. "Size: between Reed-Bunting (*Emberiza schœnielus*) and Goldfinch (*Carduelis carduelis*) but nearer the latter. Head chestnut-brown, mottled black; very noticeable yellow stripes above and below eye, the lower one moon-shaped. Back and rump chestnut-brown; darker primaries. Under-parts pale buff. Tail distinctly shorter than those of the Reed-Buntings near by, with white

outer tail-feathers showing in flight. A compact, neat little bird and very lively."]

LAPLAND BUNTING (*Calcarius lapponicus*).

One on March 17th and from one to four regularly between September 29th and mid-December.

SNOW-BUNTING (*Plectrophenax nivalis*).

First autumn record September 16th, increasing to maximum of c. 100 by third week of November.

SHORE-LARK (*Eremophila alpestris*).

No spring passage. First record in autumn was one bird on October 19th, and the winter flock "peaked" at 34 birds in mid-November.

BLUE-HEADED WAGTAIL (*Motacilla f. flava*).

Typical males recorded singly on April 27th and May 11th.

GREAT GREY SHRIKE (*Lanius excubitor*).

One on March 30th. One between October 20th and November 6th with two on October 21st.

WAXWING (*Bombycilla garrulus*).

Two on January 26th, one on February 5th and from three to five between November 11th and 15th.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

A female or immature on Blakeney Point on August 26th.

FIRECREST (*Regulus ignicapillus*).

One with many Goldcrests (*R. regulus*) on October 2nd.

NORTHERN WILLOW-WARBLER (*Phylloscopus trochilus acredula*).

A bird of the brown and white type ringed on May 23rd.

EVERSMANN'S WARBLER (*Phylloscopus borealis*).

One on Blakeney Point on September 21st.

GRASSHOPPER-WARBLER (*Locustella naevia*).

One singing on passage on September 10th.

AQUATIC WARBLER (*Acrocephalus paludicola*).

One by a reedy pool at Blakeney on September 18th.

SUBALPINE WARBLER (*Sylvia cantillans*).

A male at the Observatory on June 11th (*vide* p. 262).

RING-OUZEL (*Turdus torquatus*).

Single birds on April 13th and May 7th. One at Blakeney Point on September 21st, between 20 and 30 there on October 3rd and four on the 6th.

BLACK REDSTART (*Phœnicurus ochrurus*).

Single birds January 27th, March 19th-20th; adult ♂ March 30th-April 1st; adult ♂ April 15th-17th and June 14th; and a juvenile on July 22nd.

BLUETHROAT (*Luscinia succica*).

Blakeney Point.—From one to four present during second week of September, five on October 2nd, and two on the 3rd.

CONTINENTAL HEDGE-SPARROW (*Prunella m. modularis*).

A bird of this race ringed on October 4th.

SWIFT (*Apus apus*).

Phenomenal westerly movement "peaked" at 5,000-6,000 birds a day on July 6th and 7th.

WRYNECK (*Jynx torquilla*).

Single birds on May 11th and September 9th.

HOBBY (*Falco subbuteo*).

One on June 3rd and another on August 14th.

OSPREY (*Pandion haliaetus*).

One on May 18th and one on June 8th.

SPOONBILL (*Platalea leucorodia*).

Single adults on June 2nd and 3rd, and 16th and 17th.

PURPLE HERON (*Ardea purpurca*).

An immature between May 10th and 12th.

BEWICK'S SWAN (*Cygnus bewickii*).

From one to ten between March 7th and 27th.

LEACH'S FORK-TAILED PETREL (*Oceanodroma leucorhoa*).

Single birds on September 7th, October 22nd and November 5th.

LITTLE RINGED PLOVER (*Charadrius dubius*).

An adult on May 6th, and three on September 10th.

KENTISH PLOVER (*Leucopolijs alexandrinus*).

Three on September 11th.

DOTTEREL (*Eudromias morinellus*).

Up to three (two adults, one juvenile) between August 27th and September 5th.

CORN-CRAKE (*Crex crex*).

One on April 20th and another on September 7th.

SKOKHOLM BIRD OBSERVATORY, 1951.

BY

P. J. CONDER

THIS note is drawn from the *Skokholm Bird Observatory Report* for 1951, obtainable from the Hon. Sec., West Wales Field Society, Red House, Heywood Lane, Tenby, Pems. The spring of 1951 was less windy than that of 1950 and more migration was observed. In August the weather was poor but it improved in September when a few rarities occurred and when there were some marked peaks of migration. The following are some of the more interesting occurrences.

ORTOLAN (*Emberiza hortulana*).

Two immatures were seen on September 11th, on the same date as the Woodchat Shrike. This is the fifth record for the island.

TREE-SPARROW (*Passer montanus*).

One on May 31st. Fourth record for the island (c. 10 Tree-Sparrows were recorded in early October at St. Ann's Head on the mainland four miles from Skokholm.—J. H. Barrett and P.J.C.).

WOODCHAT SHRIKE (*Lanius senator*).

A young bird was seen on September 11th and 12th. Fifth record for the island.

WOOD-WARBLE (*Phylloscopus sibilatrix*).

One caught on August 9th. First record for the island.

OLIVACEOUS WARBLER (*Hippolais pallida*).

One caught on September 23rd which is apparently the second definite record for Great Britain.

LESSER WHITETHROAT (*Sylvia curruca*).

One on May 30th. Sixth record for the island.

NIGHTINGALE (*Luscinia megarhyncha*).

One was caught in the Garden Trap on May 4th. This is the first record for the island and the second definite record for Pembroke-shire.

SHELD-DUCK (*Tadorna tadorna*).

Two on April 2nd. Second record for the island.

GARGANEY (*Anas querquedula*).

A duck and drake remained on North Pond for most of the morning of June 1st. First record for the island.

JERSEY, 1951.

BY

WILFRED D. HOOKE

THE work of the Jersey Observatory in 1951 was largely exploratory. A permanent Heligoland trap at the nature reserve administered by the Société Jersiaise (the parent society) was completed in March. A portable Heligoland type trap has also been experimented with on various occasions on several of the small islets off the coast of Jersey. A total of 1,025 birds of 43 species was ringed during the year, including 285 nestling Gannets (*Sula bassana*) at the colonies on Ortac and Les Etacs off Alderney. There have been four recoveries from these Gannets, one from Beni Saf, Algeria.

The spring and autumn migrations appear to have followed the normal pattern, but the lack of detailed records for the previous years makes accurate comparison difficult. A reduction in the numbers of waders wintering around the island is of interest. The first flocks passed through as usual but the population of winter residents never reached the numbers normally expected.



BLACK WOODPECKER (*Dryocopus martius*).

MALE. SWEDEN.

(Photographed by P. O. SWANBERG).



BLACK WOODPECKER (*Dryocopus martius*).

FEMALE. SWEDEN.

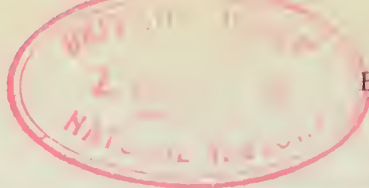
(Photographed by P. O. SWANBERG).



BLACK WOODPECKER (*Dryocopus martius*).

FEMALE. SWEDEN

(Photographed by P. O. SWANBERG).



BLACK WOODPECKER (*Dryocopus martius*).

ADULT. HOLLAND.

(Photographed by J. T. STRIJBOOS).



BLACK WOODPECKER (*Dryocopus martius*).

YOUNG. HOLLAND.

(Photographed by Jb. V. D. PERREL).



WHITE-BACKED WOODPECKER (*Dendrocopus leucotos*).

SWEDEN.

(Photographed by P. O. SWANBERG).



WHITE-BACKED WOODPECKER (*Dendrocopus leucotos*).

SWEDEN.

(Photographed by P. O. SWANBERG).



WHITE-BACKED WOODPECKER (*Dendrocopus leucotos*).
SWEDEN.

(Photographed by P. O. SWANBERG).



LONG-TAILED TIT (*Aegithalos caudatus*).

UPPER : TWO MALES AT NEST, ONE FEEDING YOUNG, THE OTHER WAITING HIS TURN TO DO SO.

LOWER : FEMALE WITH TAIL PROJECTING FROM SECOND NEST ENTRANCE.
(Photographed by Commander A. W. P. ROBERTSON).

(See p. 257).

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLI. THE BLACK WOODPECKER.

Photographed by Jb. v. d. PEPPER, J. P. STRIJBOS
AND P. O. SWANBERG.

THE WHITE-BACKED WOODPECKER.

Photographed by P. O. SWANBERG.

(Plates 53-59).

WE are indebted to P. O. Swanberg for photographs of the Black Woodpecker (*Dryocopus martius*) taken in Sweden, and to Jb. v. d. Peppel and J. P. Strijbos for Dutch material. The bird is not officially admitted to the British list, although it has in the past been reported several times and breeds no farther away than Belgium and Holland where it has been spreading westwards fairly recently. There is, however, no particular reason why it should not reach this country occasionally; adults are sedentary, but young birds at times wander considerably, and small numbers occur regularly on passage on the German coast. It is the size of a small crow, all black except for a red patch on the head. The pale eye and bill show well in the plates.

Mr. Swanberg has also kindly supplied the photographs of the White-backed Woodpecker (*Dendrocopus leucotos*), which breeds in the Alps, Scandinavia and eastwards. It is the size of a Great Spotted Woodpecker (*D. major*) and is separated from it and the rather smaller Middle Spotted Woodpecker (*D. medius*) by the white lower back and the lack of a large, elongated white shoulder patch. In the photographs the white of the lower back is concealed by shadow and the position of the wings, but the black bars across the white on the shoulder show clearly. P.A.D.H.

REPORTS ON THE MOVEMENTS OF SOME COMMONER SUMMER MIGRANTS AT BRITISH BIRD OBSERVATORIES IN 1951.

As already mentioned, these reports are confined to the spring migration. The expression "Bird/Days," as used last year, represents the sum of the birds recorded each day, and as individuals may stay for more than one day it does not necessarily represent the number of different individuals seen.

YELLOW WAGTAIL.

THE spring passage of the Yellow Wagtail (*Motacilla flava flavissima*), began on April 2nd with the arrival of one bird at Cley. From that date the northward progress of the species up the east coast of

England and Scotland was quite regular, until the first arrival at Fair Isle on May 3rd. As will be seen from the accompanying table, the only irregularity was the date of May 4th for the first bird at the Isle of May. The west coast passage began at Jersey on April 15th, to be followed by first arrivals at Lundy on April 19th and at Skokholm two days later.

Following the first arrivals, the periods of maximum movement did not fall into such a regular pattern on the east coast. This suggests that detailed investigation of the migration routes across the south coast and overland through the inland counties might provide some interesting data. Spurn Observatory offers the additional information that the Yellow Wagtail was first observed at Ryhill reservoir on April 14th and continued to be seen in that area until mid-May, with *c.* 40 on May 6th; also, at Dewsbury sewage farm *c.* 100 were noted on April 19th. The species is not thought to round Spurn Point, but rather to advance towards the district from the south-west. Peak periods at the three western observatories followed a progressive pattern.

Information concerning the arrival of females is unfortunately scarce and has therefore been omitted from the table. Jersey recorded two among their first arrivals on April 15th, and during the remainder of the spring passage a proportion of females was noted with every group of birds observed. At Monks' House, the first female was seen on May 7th, 13 days after the arrival of the first male. Two females were observed with the first cock at Fair Isle on May 3rd, but the subspecies of these birds is uncertain.

On the east coast, last arrivals at Gibraltar Point, Spurn, Monks' House and the Isle of May were progressively earlier towards the north, whilst at Fair Isle the date of June 11th is the latest on record for that observatory. On the west coast, last observations for the species again follow a regular pattern.

In both groups of observatories the total number of observations of the Yellow Wagtail tends to diminish towards the north. For the sake of uniformity "Bird/Days" have been chosen for the units in tabulating these figures but, from examination of the actual data submitted by the Observatories, it is probable that they approximate fairly accurately to the number of birds observed.

The weather during the first half of April was unsettled over most parts of the British Isles, with rainfall above average. This was followed by a fine, dry spell with exceptional sunshine during the last two weeks, but temperatures were below normal. May was generally cool; cloudy and wet in England and sunny in Scotland.

Whilst it would be premature to draw any far-reaching conclusions from this, the first, co-ordinated report on the Yellow Wagtail by the British Bird Observatories, many lines of enquiry are at once apparent from the general pattern of the observations. It is to be hoped that further and more detailed work will be devoted to the species, which lends itself so admirably to research of this nature.

SPRING PASSAGE OF YELLOW WAGTAILS AT THE BRITISH OBSERVATORIES, 1951

Observatory	First Arrivals	Peak of Migration	Last Arrivals	Total Bird/days
<i>E. Coast</i>				
Cley	April 2nd (1)	April 14th (several)	Not Recorded*	Not Estimated*
Gibraltar Point	April 15th (1)	May 2nd-3rd (30 Bird/days)	May 30th (3)	77
Spurn	April 23rd (2)	May 12th (4 birds)	May 27th (2)	13
Monks' House	April 24th (c. 30)	April 24th (c. 30)†	May 15th (2)	37
Isle of May ...	May 4th (2)	Not Appreciable	May 12th (1)	3
Fair Isle ...	May 3rd (1)	Not Appreciable	June 11th (1)	4+
<i>W. Coast</i>				
Jersey	April 15th (12)	April 21st-22nd (c. 60 Bird/days)	May 10th (20+)	107+
Lundy...	April 19th (1)	April 21st-25th (6 Bird/days)	June 2nd (1)	10
Skokholm ...	April 21st (1)	May 10th-15th (11 Bird/days)	June 3rd (2)	26

*At Cley in the latter part of April local breeding birds were inseparable from migrants.

†At Monks' House the initial wave on April 24th was the largest number recorded.

E. D. H. JOHNSON.

RED-BACKED SHRIKE.*The records.*

THE first record of a Red-backed Shrike (*Lanius collurio*) at a bird observatory in 1951 was a ♀ which spent May 12th-15th at Spurn. The first at Fair Isle was also a ♀, May 17th, and on the same day Gibraltar Point recorded a ♂. From May 19th there was a steady movement of Red-backed Shrikes at Fair Isle, with occasional records by L. S. V. Venables in south Shetland from the same date. There were three peaks in this movement, a small one on May 21st (2 ♂♂, 1 ♀) and bigger ones on 26th (5 ♂♂, 2 ♀♀) and 30th (5 ♂♂, 2 ♀, plus 1 ♀ Shetland). This series of daily records at Fair Isle was broken on June 2nd, and at Spurn Point a ♀ which had been present since May 30th was last seen on this day.

Reckoning on the purely arbitrary basis of Bird/Days Fair Isle had 41 records, Shetland seven, Spurn Point eight, and Gibraltar Point one. Cley and Isle of May on the east coast, and Lundy, Skokholm, Great Saltee and Jersey in the south-west, did not record

shrikes. As R. C. Chislett is definite that only two individuals, staying four days each, were at Spurn, it is clear that a concentration of Red-backed Shrikes was experienced only in the north. Here, records of ♂♂ (27) outnumbered records of ♀♀ (17), and the distribution of the sexes shows no appreciable pattern over the period.

The migration.

Examination of the series of "Daily Weather Reports" issued by the Meteorological Office of the Air Ministry leads to the following interpretation. The Spurn example of 12th, and the Gibraltar Point bird of 17th, might have arrived as drift-migrants from N.E. on the airflow of high pressure areas covering north Britain on 11th and 16th. It would seem more likely that the isolated Fair Isle occurrence of 17th was an early drift-migrant moving out.

The situation from May 19th onwards, however, is clear, and the Fair Isle and Shetland birds of that day were among the fore-runners of a big fall of northern summer-visitors of various species which culminated on 20th-21st. Central Europe lay in a col on 19th between high pressure areas covering the eastern Mediterranean and western Norway, and calm or light air conditions conducive to migration existed over most of the Continent. Below the northern high an easterly airstream prevailed from the Low Countries to the Skaggerak and across the North Sea, and although the wind was light the migrational drift was on a very large scale (see p. 261). Conditions were similar on 21st, and on 22nd-23rd the drift was maintained, but at a lower intensity, by the northwards movement of a cold front succeeded by an occluded front the following day. On 25th-26th there was a renewal of the conditions at the beginning of the period, resulting in the first big peak of shrike arrivals in the north (fig. 1). Drift was still apparent on 27th on the north side of a low which had moved overnight from northern France to east Anglia, but was much reduced on 28th by an extension of the low pressure system to Denmark and southern Norway.

An anticyclone, approaching from the Iceland-Færoes area, was centred over the north of Britain on May 30th, bringing calm weather (fig. 2). The second big peak of shrike arrivals at Fair Isle and south Shetland, therefore, is attributable to the outward passage of birds which had been deflected to north Britain during the previous week. This high remained for several days, and shrikes were passing intermittently till June 2nd. The records of June 5th, 10th, 20th and 29th, in all probability, can be ascribed to outgoing birds.

The Weight Records.

Given a sufficient number of records which could be assigned unequivocally to one or the other of these categories, it ought to be possible to test the validity of the above interpretation by a comparison of the weights of trapped birds. Drift-migrants which had just done a long oversea flight and sustained abnormal weight-loss due to the utilisation of their store of muscle and liver glycogen and body-fats, would be noticeably lighter than outgoing passage

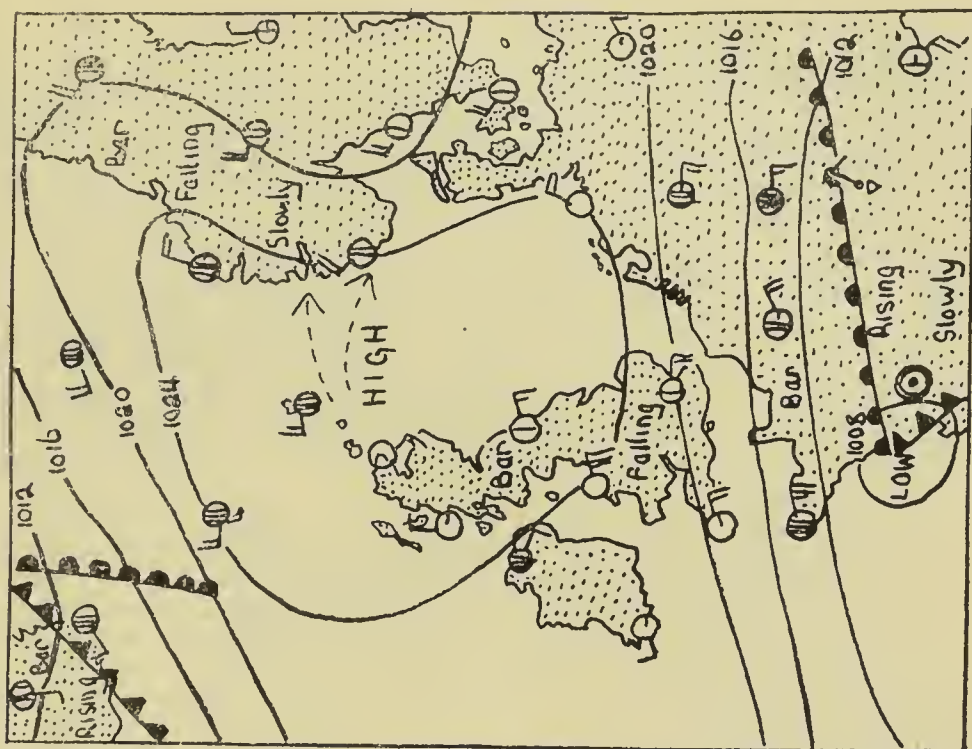


FIG. 2.

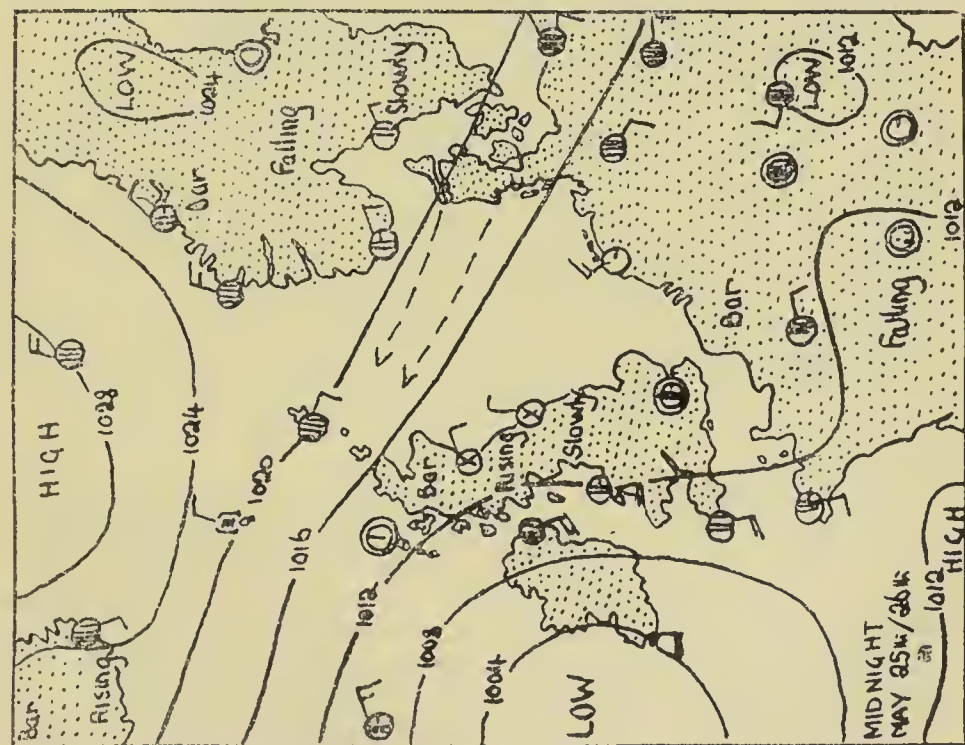


FIG. 1.

migrants which had had a short period in which to recuperate (see *Fair Isle Bird Observatory Annual Rep.*, 1949, p. 15, *idem.* 1950, p. 6, and *Isle of May Bird Observatory Rep.*, 1950, in *Scot.*

Nat., 63, pp. 56-63, for examples of gains in weight on the part of resting migrants).

There are, however, certain snags which militate against a clear delimitation of the two categories: there is, for instance, a diurnal cycle of weight variation, so that early morning weights of birds in the passage group, before feeding had begun, would not show the sharp distinction from drift-arrival weights that one might expect to find later in the day. There may be a sex difference; and it is obvious that a drift-migrant trapped after it had been a day or more resting on the island would give an inflated figure for its group. Despite these complications, an examination of the weights of Red-backed Shrikes trapped at Fair Isle in May and June does lend support to the migration analysis offered above. Captures in each of the two groups are set out below:—

A. Drift arrivals.

- PJ 908 ♀ May 26th, 17.00 hrs. G.M.T. 30.20 gm.
- PJ 908 ♀ May 27th, 09.00 hrs. G.M.T. 30.59 gm.
- PJ 909 ♀ May 26th, 17.00 hrs. G.M.T. 25.03 gm.
- PJ 910 ♂ May 26th, 19.30 hrs. G.M.T. 25.98 gm.
- PJ 912 ♂ May 28th, 19.00 hrs. G.M.T. 27.31 gm.

B. Passage Birds.

- PJ 918 ♀ June 2nd, 14.30 hrs. G.M.T. 28.90 gm.
- PJ 921 ♂ June 20th, 15.45 hrs. G.M.T. 28.80 gm.
- PJ 924 ♀ June 29th, 19.00 hrs. G.M.T. 32.92 gm.

The low weights of PJ 909-910 on May 26th, at the climax of the drift period, are in marked contrast to the weights of outward-bound birds in June. The high weight of PJ 908 is puzzling, but it may be explained by the fact that the bird was disturbed from the body of a Robin (*Erithacus rubecula*) before the first trapping, and was recaptured the following morning whilst devouring a Sedge-Warbler (*Acrocephalus schænobaenus*). It may, of course, have arrived earlier. The comparatively high weight of PJ 912 may be due to its capture at the end of the drift period—this bird also may have arrived at Fair Isle a day or two before.

Summary.

The passage migration of Red-backed Shrikes in spring, 1951, was concentrated in the north of Britain, and an analysis in the light of the meteorological conditions shown in the "Daily Weather Report" reveals a similar pattern to that found in the case of the Ring-Ouzel (*Turdus torquatus*). The main movement took place uninterruptedly between May 19th and June 2nd, culminating on May 26th, and laggards were passing irregularly to June 29th. There were two peaks, the first resulting from migrational drift of birds which had reached the area Germany-Denmark-Skaggerak from S.E. through a col in Central Europe; and the second due to the elements of this same drift leaving the country under optimum anticyclonic conditions four days later. KENNETH WILLIAMSON AND ALEC BUTTERFIELD.

RING-OUZEL.

DURING April, 1951, occurrences of the Ring-Ouzel (*Turdus torquatus*) were few and widely scattered as to time and place, and the great majority doubtless represent arrivals of British breeding-birds. The earliest records are from Ross Links, Northumberland, on March 24th, and Gorpel, Yorkshire, on the following day. In early April one was on the Inner Farne. A single bird was at the Isle of May from April 3rd-6th and another or others from 8th-17th. There was a ♂ at Gibraltar Point on 17th, and a bird at Ross Links on 21st. Norfolk records are for single birds on 13th and 23rd and two on 24th. In the west, Skokholm had one on April 6th, a ♀ from 15th-18th, and pairs on 19th and 21st, with a final bird on 24th. At Jersey, a ♂ was recorded on April 18th, and the Lundy records show single birds April 10th-14th, 17th, 21st, 24th, 26th, 29th and May 1st.

None reached Fair Isle in April, nor were any noted at Spurn or Great Saltee. Thus far the records support *The Handbook* statement of immigration of British breeders from mid-March to early May (vol. ii, p. 133). At first sight it might seem that the preponderance of records from Lundy and Skokholm supports *The Handbook* view of a mainly south-west entry into the British Isles; it is not possible to draw any firm conclusion on this point, however, as there is a strong suggestion that the movements are influenced by the wind. Thus, the majority of the records during the first three weeks of the month, when the prevailing wind was westerly throughout, fall along the east coast; and the larger proportion of the later records are from the south-west and coincide with a period of mainly easterly weather.

During May there were no less than five separate movements of Ring-Ouzels on the east and north coasts of Britain. The first was on a large scale at the very beginning of the month, and was recorded from Fair Isle to the Holy Isle of Lindisfarne, Northumberland, but not farther south. A single bird was at Spurn on May 4th-5th. The second, a minor movement on May 7th-8th, was observed from the Norfolk coast to Spurn and Teesmouth on the Yorkshire coast, but not farther north. These movements were clearly the result of migrational drift from the Continent. (For a discussion of the concept of migrational drift and its importance in the British area, see the present author in *Scot. Nat.*, in press.) The next two movements, also small ones beginning on May 10th and 17th, were observed only at Fair Isle, and represented outward passage of birds which had entered the country as drift-migrants earlier in the month. Lastly, two ♀♀ at Fair Isle on May 24th arrived under conditions highly suggestive of trans-North Sea drift.

The movement at the beginning of May was on a comparatively large scale for this species and is worth analysing in detail. Two which reached the Isle of May on April 30th were evidently forerunners of the influx of May 1st, when eight birds appeared there and

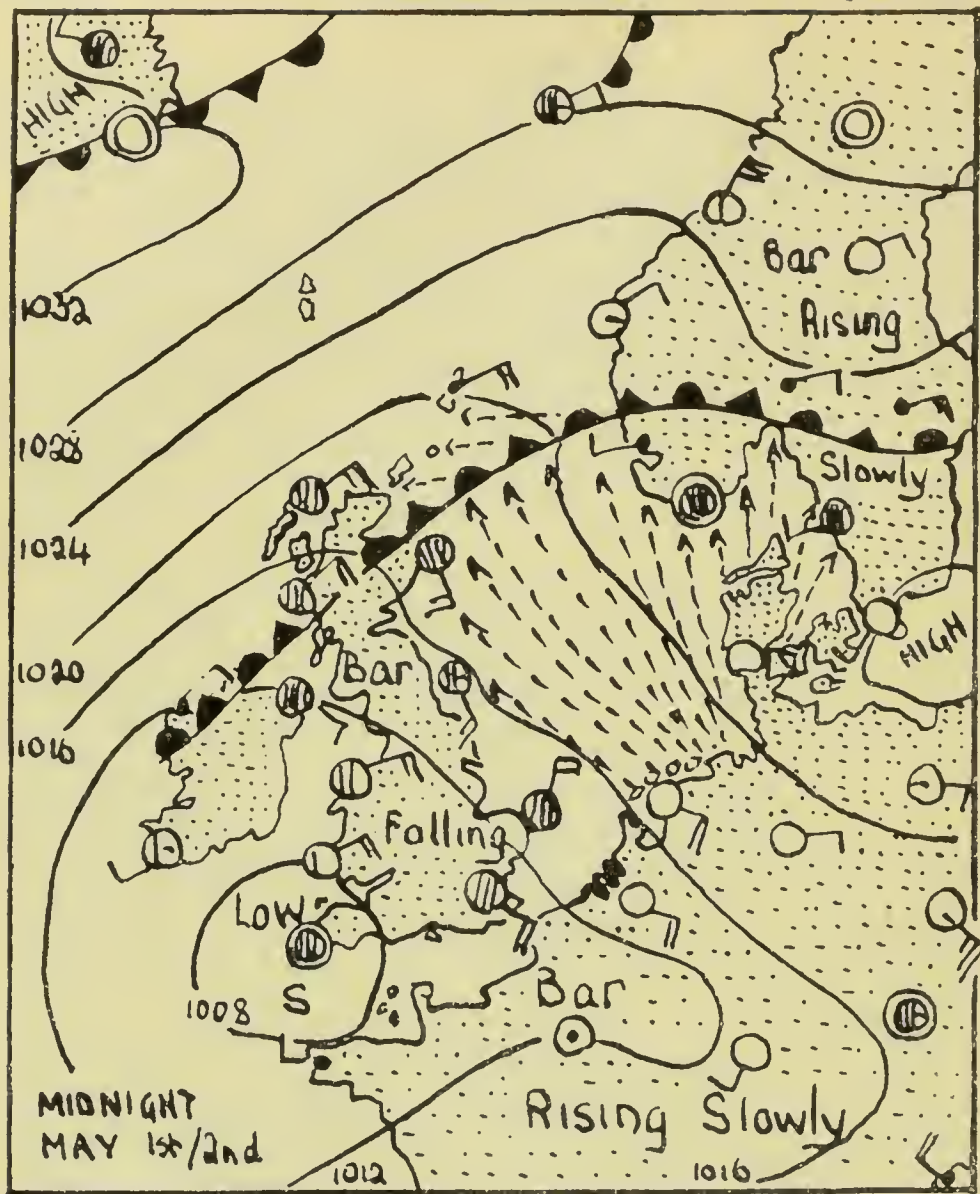


FIG. 1.

a similar number (in the evening) at Fair Isle. This culminated in a rush of 25 and 20 at these places respectively next day. On May 2nd six birds were noted at Lindisfarne, and 12 were counted on 3rd. As J. H. R. Boswall, to whom I am indebted for the Holy Island records, did not arrive there until 17.00 hrs. G.M.T. on 2nd it is likely that the count he then made is not comparable with his count during 11 hours' watching next day. This point is emphasized because both Fair Isle and Isle of May recorded decreases on 3rd, Ring-Ouzels disappearing from Fair Isle afterwards, but showing a very gradual decrease at the Isle of May to five birds on May 10th. The migration, at all three observation points, was not confined to Ring-Ouzels and several other species took part, including a fairly large number of Fieldfares (*Turdus pilaris*).

Two considerations suggest that this drift involved birds which were moving into Scandinavia from Central Europe, having come from the south-east. These points are, firstly, the distribution of the records on the east coast, with none in the southern section; and secondly, the development of the anticyclonic conditions which must have initiated this stage of the migration and contributed to the drift.

This anticyclone had covered eastern Europe and the Balkans since April 28th; its westwards flow was fairly rapid after 30th, and from early on May 1st conditions were unusually calm and clear and very favourable for migration throughout Germany. Drift of birds attempting to cross the Skagerrak could be expected in view of the presence over Denmark of a westwards-moving low, with strong east winds on its northern side, backing north-east over the North Sea. During the early morning an alteration occurred in the movement of the fronts associated with this low, causing a slight veer of wind in Forties and East Fair Isle—a fact which may explain why no arrivals took place at Fair Isle until evening. The heavier overnight drift on 1st/2nd probably involved birds from farther south, displaced from the coasts of Denmark and North Germany (fig. 1). That this migration came from the south-east and not from France seems abundantly clear in the absence of Ring-Ouzels from Spurn and southwards on this peak day, since the overnight position of the trough of low “S” should, in the latter event, have produced drift all along the east coast.

Three birds on the Norfolk coast on 7th-8th, a ♂ at Gibraltar Point on 7th, two at Teesmouth on 6th and 10th and six at Spurn between these dates follows the distribution one would expect in view of the North Sea conditions at that time, the airstream from the Skagerrak southwards being north-easterly on the north-western flank of a depression then centred over France (fig. 2).

The May 10th movement at Fair Isle is most interesting; five birds occurred on that day, and three on 11th. Without doubt this movement was due not to drift, but to passage-migration of the birds that had been deflected to Britain earlier in the month. This was the first time that the north and west of Britain had enjoyed anticyclonic weather since the migrational drift of May 1st-2nd, a belt of light airs and calms extending from Ireland across Scotland to southern Scandinavia—which outward-bound birds could hardly fail to reach successfully under these conditions (fig. 3). Other species associated with the Ring-Ouzels are highly suggestive of movement from the south-west, e.g., two Carrion Crows (*Corvus corone*)—rare at Fair Isle, which is beyond their normal range—and the first passage of Greater Wheatears (*Enanthe c. leucorrhoa*). It may also be significant that the remnants of the earlier drift, five in number, disappeared from the Isle of May at this time.

Somewhat similar conditions prevailed on May 17th-18th, an anticyclone over northern Britain again extending to southern

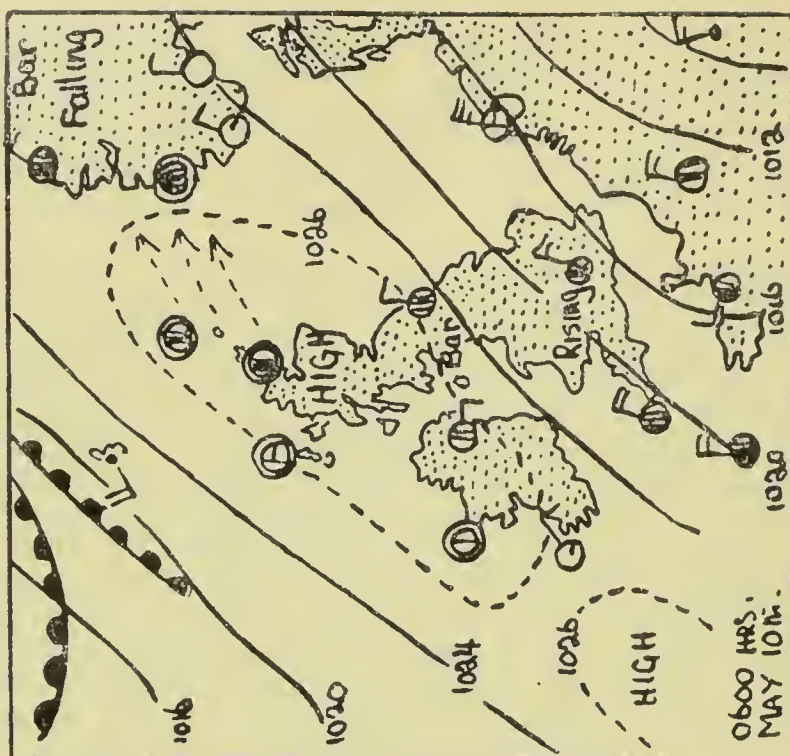


FIG. 3.

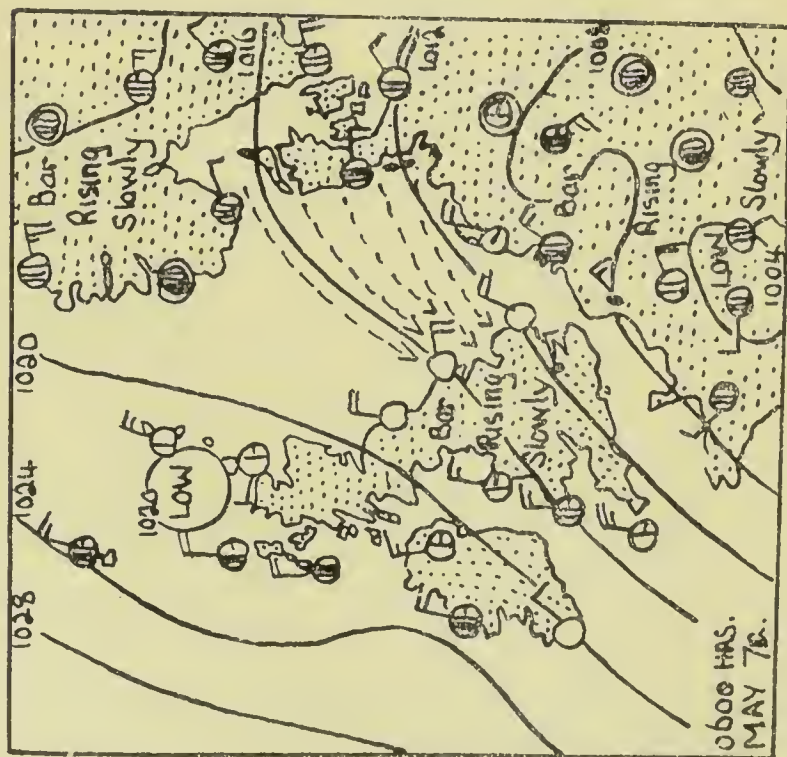


FIG. 2.

Scandinavia. Passage at Fair Isle was light but a variety of species was involved, the most abundant numerically being diurnally-migrant Swallows (*Hirundo rustica*) and the six Ring-Ouzels. The last two Ring-Ouzels, ♀♀ on May 24th, are more likely to have been drift-migrants carried across the North Sea on a south-easterly airstream caused by the line of occlusion of an Atlantic depression then filling up some way west of Ireland.

We may summarize the migration as follows. Scattered records during April indicate the return of the British breeding-stock. May movements on the east and north coasts are due to two factors; (1) migrants moving into Germany and Scandinavia from the south-east being displaced by easterly winds in the North Sea area, and (2) these same migrants taking passage out of Britain as soon as optimum weather conditions permit. The peak of the return movement of Scandinavian Ring-Ouzels was at the beginning of May in 1951, but there were still stragglers 24 days after the main rush. The very gradual decline at the Isle of May following the big drift of May 1st-2nd perhaps indicates a tendency on the part of displaced birds to delay onward passage in a congenial haunt until suitable weather conditions act as a new stimulus to the migration urge. On the other hand, the succession of records may be due in part to northward coasting of birds which had earlier reached the Northumberland coast.

I am grateful to those in charge of the various Bird Observatories for supplying the information on which this analysis is based, and to the Director of the Meteorological Office, Air Ministry, for permission to use diagrams based on "The Daily Weather Report."

KENNETH WILLIAMSON.

SPRING MIGRATION OF WRYNECK AND CUCKOO AT EAST-COAST BIRD OBSERVATORIES, 1951.

THE first records of Wryneck (*Jynx torquilla*) and Cuckoo (*Cuculus canorus*) at an east-coast observatory were at Spurn on April 24th-25th, when different Wrynecks were observed on the two days and the first Cuckoo appeared. Two Cuckoos were at Monks' House and another at Alnwick, Northumberland, on 24th, the earliest in this region having been noted at Lanchester on 20th (*Northumberland and Durham Nat. His. Soc. Rep.*, 1951). Conditions over England were anticyclonic at this period, with light winds or calms, and as North Sea winds were westerly these records must represent the movement of British birds.

The next appearance of Wrynecks was due to trans-North Sea drift and was shared by Fair Isle, where a bird was trapped on May 2nd, and Isle of May, where one on 1st was succeeded by two on 2nd-3rd. Single Cuckoos were at both places on 3rd, and Gibraltar Point (where the first had appeared on April 30th) recorded three on this day. The weather conditions at this time have been summarized in the article on Ring-Ouzel (*Turdus torquatus*), *antea* p.

252, where it is shown that the migration came from south-east Europe. At Spurn, the spring peak of Cuckoo migration was three days later—two birds on 5th and four on 6th—with the meteorological situation not differing in any important respect.

A Wryneck was picked up in a dying condition at Lesbury, Northumberland, on May 7th, and there were birds at Spurn on 10th-11th and at Cley on 11th. On these last two days an anticyclone had reached northern Scotland from the west, but the north-easterly airstream of this high pressure continued to affect the North Sea between the Skagge Rak and Denmark and the English coast, so these records too are very likely due to drift.

In view of the anticyclonic conditions existing in the north of Scotland, Cuckoos at Fair Isle on 9th and 12th are more likely to have been earlier drift-migrants seeking passage out of the country. Similar circumstances attended the appearance of two Wryncks at Fair Isle on May 17th and a Cuckoo at the Isle of May next day. A Cuckoo at Fair Isle on 19th may be in the same category, but it is difficult to be sure as this was a transitional period when rapid changes on the Continent and over the North Sea were responsible for the onset of a heavy migrational drift.

From May 19th to June 2nd there were daily records of Cuckoos at Fair Isle, with a single bird on June 4th (30 "Bird/Days"). One was at the Isle of May, and three at Gibraltar Point, on 20th. The weather conditions at this period have been described in previous notes, *antea* pp. 248-255, and again the migration was proceeding in a north-westerly direction through Central Europe. The peak day at Fair Isle was May 21st with seven Cuckoos and three Wryncks, following a single Wryneck on 20th. There were also three Cuckoos on 27th, again apparently due to drift on easterly winds between an anticyclone to the north and a low covering southern England. High pressure conditions favourable for the departure of these birds developed on May 29th as explained in the note on Red-backed Shrike (*Lanius collurio*), *antea* p. 248, and persisted until June 5th. Later records of out-going Cuckoos were noted on June 18th and 25th-26th.

Summary. The migration of both species seems to have been very protracted. Thus, drift of Wryncks from the Continent took place intermittently during the first three weeks of May, and in nearly every case Cuckoos were associated with them. This species, however, showed two well-defined peaks, on the Lincolnshire-Yorkshire coast from May 3rd-6th, and at Fair Isle a fortnight later; on each occasion, the meteorological conditions governing the drift indicate a migration proceeding S.E.-N.W. through Central Europe, the direction expected from the evidence of ringing recoveries (see *antea* vol. xxviii, p. 112). As in the case of the previously studied species, movements at Fair Isle are due partly to drift, partly to the departure of re-orientated birds under anticyclonic conditions.

KENNETH WILLIAMSON.

NOTES.

Long-tailed Tits' unorthodox nesting arrangements.—On April 21st, 1951, the writers found the nest of a Long-tailed Tit (*Aegithalos caudatus*) in the main fork of an apple tree near Brandon, Suffolk. Such a site is unusual in East Anglia, and the nest had the further distinction of an entrance hole at front and rear. The female was then about to lay. The nest was inspected intermittently during the next fortnight, and it was even then noticeable that there were three Long-tailed Tits in the nesting area, though it was not possible to distinguish the sexes.

On May 19th, the young were *c.* three days old and the presumed female was brooding them. She invariably sat with her head looking out of the northern entrance and her tail projecting vertically from the southern entrance. When she moved about inside the nest to attend the young, the tail waved above it like a small semaphore arm. From a hide at 4 ft. it immediately became apparent that the three birds previously observed were all (as we had suspected) taking part in the nesting operation. It was also possible to distinguish their sexes with some certainty. The brooding bird who received and passed on food to the young had a heavily abraded tail (which was not surprising) and was clearly a female. Of the other two, one was whiter about the head and shoulders than the other, and, to judge from their behaviour, both were males. These two worked in complete harmony; both would arrive near the nest simultaneously, and while one passed food to the female, the other awaited his turn. The female would accept both catches, and when the males had gone off hunting together, would pass on the food to the young.

Each male had his own approach, one feeding from the right of the nest, the other from the left. With the female present they made no attempt to enter except once, when the whiter male went in at one hole and out of the other with the female still brooding. On another occasion this bird flew off with a feather which he had wrenched from the southern entrance, dropped it 20 yards away, fluttered after it to the ground, and brought it back to the N. entrance. He offered it to the female, who took it into the nest.

When the young were *c.* five days old, the two males returned to the nest for the first observed time when the female was absent. For a short time they hovered round with the characteristic chirring warble, seemingly at a loss; then the dark bird fed the young himself and the other succeeded him. As the young grew, and the female's absences became more frequent, the males fed them without further hesitation.

By the time the young were *c.* nine days old either entrance was being used indiscriminately by all three birds, and in the female's absence the males would normally enter at one and leave by the other. The female brooded the young for short periods almost to the fledging date, usually bringing food with her and remaining in

the nest, which by then resembled that of a Chaffinch (*Fringilla caelebs*), with a felted "basket" handle; the two entrances were ragged and much enlarged. Ten chicks fledged, and one egg was added.

A. W. P. ROBERTSON AND S. C. PORTER.

Woodchat Shrikes in Surrey and Suffolk.—Messrs. A. R. F. Hills and E. Giles have supplied a satisfactory report of a Woodchat Shrike (*Lanius senator*) seen at Bookham Common, Leatherhead, Surrey, on May 26th and 27th, 1951. Excellent views were obtained. Mr. Peter J. Oram has sent details of a Woodchat Shrike on a common near Dunwich, Suffolk, on June 10th, 1951. Another at Skokholm is reported on p. 243. We published (*antea*, vol. xlv, p. 63) three records of this species for 1950; *The Sussex Bird Report* (1950, p. 9) adds another, a pair seen at Pagham on May 19th.

It seems possible that this species, of which "over forty" occurrences are mentioned in *The Handbook*, is now appearing in greater numbers. We would be glad to receive further records.

Red-breasted Flycatcher in Surrey in June.—At about 12.30 p.m., on June 10th, 1951, I saw a very small bird perched on a low barbed-wire fence on the Ockham and Martyrs Green road in Surrey; I identified it as a Red-breasted Flycatcher (*Muscicapa parva*). It was not more than about $4\frac{1}{2}$ in. in length. Upper-parts were grey-brown with the head greyer still; bill brownish. The throat and upper breast were a warm orange, darker on the chin and throat. The breast patch was medium in width and short in length. The under-parts were creamy-white and the under tail-feathers conspicuously white, seeming to extend to the side of the tail and maybe onto the top of the tail though I was unable to get a clear view of the bird from above. The legs were brownish in colour.

The bird was very active like all flycatchers, and its tail and head were moving all the time. The tail was flicked rapidly up and down and the head seemed to move in time with it. The bird did not call during the five minutes I had it under observation.

E. L. CROUCH.

Pallas's Warbler at Monks' House, Northumberland.—On October 13th a willow-covered burn was being driven towards the garden Heligoland trap here, when what appeared to be one of several newly-arrived Goldcrests (*Regulus regulus*) flew into the trap. Goldcrests normally take no notice of the driving. I then saw that it was *not* a Goldcrest and, on going round to the gathering-box, found what I took to be a Yellow-browed Warbler (*Phylloscopus inornatus*). But, on handling, the prominent central crown-streak; the brilliant yellow superciliary stripes meeting at the nape; the sharply defined lemon-buff bar, a quarter of an inch wide, across the rump; and the minute size decided in favour of Pallas's Warbler (*Phylloscopus proregulus*), presumably an adult male from the brilliance of its colouring. Although none of us had seen before either Pallas's or Yellow-browed Warblers, the seven of us who examined the bird in

the hand (and later at large at "goldcrest range" in low thinly-foliaged willows) were satisfied that it could only be *Ph. proregulus* according to the descriptions given in *The Handbook*. We noted when the bird was in the hand that the third, fourth, fifth and sixth (slightly) primaries were emarginated; fourth and fifth equal in length and third considerably shorter.

It was ringed (MD 616) and released and went straight back to the willows, where it remained collecting aphids with the Goldcrests for the rest of the day. It spent the morning of the following day, October 14th, in the willows and, at midday, flew across into a large sycamore tree: the flight was exactly like a Goldcrest's. It remained in this tree until evening, flitting about and frequently hovering to pick aphids off leaves, but remaining persistently beneath the canopy of the crown of the tree. It was never seen to work out to the exterior of the tree, nor to hover below terminal leaf-clusters, as a Chiffchaff (*Phylloscopus collybita*) or a Willow-Warbler (*Ph. trochilus*) would have done; and yet, in the willows, it had taken very little more notice of our presence than did the Goldcrests. In the evening it returned to the willows and also, for the first time, visited an adjacent row of stunted firs; when, at last, several members of the Ornithological Section of the Northumberland, Durham and Newcastle-upon-Tyne N.H.S. had clear views of the bird at close range. They agreed with our findings and diagnosis of the previous day. It was active until dusk, for an hour after the Goldcrests had retired to roost, and disappeared on the following day, October 15th.

It was, if anything, even smaller than a Goldcrest, which it resembled fairly closely in habits but not in appearance. It was more prone to hover; apt to flit farther between bouts of searching; and seldom hung upside down. The wings were flicked incessantly in a dunnock-like way. The silhouette was not so rounded; the general coloration darker above and paler below; much brighter in hue; and the impression of pattern much more pronounced; the folded wing-tips were longer in proportion to the tail and the legs shorter and darker; the eye was smaller and the "face longer" than in the Goldcrest.

This would seem to be its second occurrence in Britain, the first bird having been "obtained" at Cley (Norfolk) on October 31st, 1896. On the present occasion a heavy passage of Robins, Blackbirds, Song-Thrushes, Redwings, Bramblings and Goldcrests had been in progress for several days, in spite of predominant south winds only occasionally veering east.

E. A. R. ENNION.

[Dr. Ennion's account published above was accompanied by some excellent coloured sketches made on the spot, which help to confirm the identification. Mr. H. G. Alexander, who has very wide experience of the *Phylloscopi* in the field, is satisfied that the bird must have been *proregulus*. It is clear that *proregulus* is the only member of the genus on the British list which fits Dr. Ennion's description, but

it has occurred only once before and the probability of its occurrence a second time is not much greater than that of other species not yet identified in Britain. The combination of the distinctive head-markings and a yellow band on the rump, and the absence of white outer tail-feathers are diagnostic.—EDS.]

Subalpine Warblers at Fair Isle and Cley.—A feature of the spring, 1951, migration at Fair Isle was the capture of two adult male Subalpine Warblers (*Sylvia cantillans*), the seventh and eighth records of the species in the British Isles. An account of the trapping of these two birds was given in *Fair Isle Bird Observatory Bulletin*, Nos. 2 and 3, 1951, but it may be of interest to publish the main points here, together with a note on the meteorological conditions prevailing at the time.

The first bird arrived on May 20th and remained until 27th. It was first seen by Philip Andrews, one of the observers then staying at the hostel, among some derelict rusty iron girders on a sheltered beach close to the South Lighthouse. It was obviously very tired, and sat in the sun with ruffled plumage and half-closed eyes. It was much more active on subsequent days, seeking insects on the lichen-covered slabs of a cliff near by, often in close proximity to other small warblers. Periodically it returned to the beach and sought the warmth and shelter of the rusty girders where it had been first seen, sometimes feeding industriously on the Chironomid gnats which were attracted by the upcurrent of warm air from the iron-work. A makeshift trap, consisting of the Yeoman Net closed at one end with a catching-box, was set in position over the girders on 22nd, and next morning Andrews, Max Budgen and H. A. Craw succeeded in catching the bird.

Plumage.

It had a Nuthatch-grey head and back, brown and abraded wing-feathers, a rich dark chestnut breast, and a delicate pinkish-buff suffusion on the sides of belly and flanks. The chestnut was in the form of a "bib" whose margin was clearly defined, not merging with the pinkish-buff below. The tail was darker than the back, blackish-brown except for the outermost feathers, which were paler and had the outer webs and part of the inner webs white. There was some white on the tips of the penultimate pair. The rump was a cleaner blue-grey than the mantle. There were pale brown fringes on the tertials only, and whitish tips to the tertials and inner secondaries. The most striking features were the clear white moustachial streaks separating the chestnut and grey, and the startling red rims which encircled the eyes—"eyes like a miniature Oyster-catcher," as one observer remarked.

After examination the bird was set free at the place of capture, where it remained, usually haunting the lichen-covered cliff, until the 27th. When in the laboratory it made a noise very like the "churr" of a Lesser Whitethroat (*Sylvia curruca*), but on the beach

the only call it was heard to utter, and that infrequently, was a hard "chep." It was examined in the lab. and watched in the field by R. Shepherd, Philip Perkins, R. E. Sharland, D. V. Freshwater, A. Colin Russell and Dr. R. G. Mayall in addition to the writer and those already named above.

When my wife and I made the routine evening visit to the Vaadal Trap on June 9th a small grey warbler with white outer tail-feathers rose from the streamside and entered the trap. It proved to be a second male Subalpine Warbler, in even more abraded plumage than the first. There were some slight differences between the two: the dark chestnut of the breast did not appear to be so rich in the second case, and the white moustachial streaks were less well-defined. There was also a complete absence of pale fringes on the worn tertials and inner secondaries. The wing-formula of both specimens agreed in that the second primary was 1.5 mm. shorter than the fifth, which suggests that they belonged to the typical race rather than *Sylvia c. albistriata* of S.E. Europe and Asia Minor, in which the second primary is longer than the fifth.

Both birds had a chestnut "eyebrow" set in the grey of the head directly above the eye. The legs were pale brown, the soles yellowish and the eye-rims brick-red. The colour of the iris itself was pale brown. The bill was black with the basal half of the lower mandible purplish-flesh and the tomia yellow. The weights and measurements were, respectively: 10.11 g. and 9.28 g.; wing-length 64 mm. and 57 mm.—the latter extremely worn, however; bill from skull 11 mm. and 10.5 mm.; tarsus 19 mm. in both cases.

The Weather.

Examination of the Daily Weather Reports of the Meteorological Office, London, suggests that both birds reached the British area from the north of Italy rather than from the Iberian Peninsula or South of France. The first may have travelled via a col between two high pressure systems, as already described elsewhere (p. 248). There were more arrivals at Fair Isle on the 20th, during the day, than on any other date in spring, and they included Lesser Whitethroats (which reached their peak with over 50 birds), Common Whitethroats (building up to peak on 21st), a male Blue-headed (*Motacilla f. flava*) and three female *flava* wagtails, and three male Red-spotted Bluethroats (*Luscinia s. svecica*). Somewhat similar conditions obtained during June 7-8th, although in this case neither of the anticyclones was so extensive. A shallow low covered France and western Germany, and there was again a S.E. airstream from the north of Italy through central Germany, backing easterly in Denmark and the Netherlands and the North Sea area. It is possible that the continuance of anticyclonic weather, with light winds favourable to migration, failed to inhibit the urge to migrate when the breeding-area was reached, causing the birds to overshoot their normal range and drift N.W. across the Continent between the two highs.

KENNETH WILLIAMSON.

At 3 p.m. on June 11th, 1951 as I was about to enter Cley Bird Observatory, a small warbler flew past me and dived into some barbed wire. The bird was flushed easily, and upon alighting in a bush near by was recognised as a male Subalpine Warbler. I drove the bird, with ease, into the Heligoland trap, but unfortunately the trap was unmaned and under repair, the catching-box door being closed and the swing door to the catching chamber missing. Despite my efforts to catch the bird it flew past me out of the trap. The following description was obtained whilst the bird was in a bush sheltered from a strong east wind. Bill dark, yellowish at base; eye noticeably red in the field, and at under three feet range in the trap it appeared *very* red. The whole of the upper-parts blue-grey, deepest on the head. Wings grey-brown, primaries darker, secondaries edged light buff. Tail decidedly browner than upper-parts, outer tail-feathers white, faintly tinged buff. A thin, but quite distinct white moustachial stripe from the base of the bill, separated the grey of the upper-parts from the pink of the under-parts. The pink of the under-parts was deepest on the throat and faded out on the flanks. Under tail-coverts white, faintly washed dirty yellow. Feet bright yellow-flesh. The bird was left at 4.30 p.m. and at 5.30 p.m. it was flushed by P.J.H. and R. A. Richardson, who confirmed the above description. All other efforts to trap the bird failed, and it was last seen by R.A.R. at 7.0 p.m. This is the first record for England and Norfolk.

P. J. HAYMAN.

Gull-billed Terns in Sussex.—On September 17th, 1950, at Shoreham, Sussex, we had several good flight views of a Gull-billed Tern (*Gelochelidon nilotica*). The bird first drew our attention by its disyllabic call which was much higher pitched and less grating than that of a Sandwich Tern (*Sterna sandvicensis*) which we had seen near by a few hours previously. We interpreted it as "kee-vick" or "kee-rick."

The following is a description compiled from our combined notes taken on the spot: In size approximating to a Sandwich Tern, but of more stocky build and having a considerably less forked tail. The flight was decidedly gull-like. The whole of the head was white except for some greyish markings on the crown and a conspicuous blackish patch just behind the eye. The rest of the upper-parts were uniform pale grey with the exception of the primaries which were greyish-brown, appearing darker beneath. The under-parts were white. The bill was noticeably short, stout and completely black, with a slight curve to the upper mandible.

The bird made no attempt to dive while under observation, but flew rather aimlessly over the fields and mud-flats adjoining the river.

We should mention that a southerly gale had prevailed on the night of September 16th and persisted throughout the following day.

The bird could not be found in the locality next day or on subsequent occasions.

C. F. BROWN AND JOHN SHEPPERD.

On April 25th, 1951, D. D. H. saw a Gull-billed Tern (*Gelochelidon nilotica*) at Langney Point, Sussex. It came in from a westerly direction, only a few yards off shore, perched for a short time on the iron "basket" marking the end of the sewage outlet, then circled briefly, coming down once to feed from the surface and finally made off in an easterly direction along the coast. The following particulars were noted: size and coloration similar to those of a Sandwich Tern (*Sterna sandvicensis*), but could be at once distinguished from this species by its heavier, more stocky shape and by its slower, heavier flight; tail less forked than that of a Sandwich Tern; bill, well seen in flight and when perched, shortish, thick and completely black; no call heard. An easterly passage of terns, including Sandwich, was taking place at the time. On July 29th, 1951, we both saw a Gull-billed Tern, likewise at Langney Point. In this case also the bird came in from a westerly direction, very near in, and, after slowly circling round two or three times, made off towards the east. The size and colour were much as those of an adult Sandwich Tern in summer plumage but we were both at once struck by its shorter and stockier build and by its slow, heavy flight. The tail was less forked than that of a Sandwich Tern. Good views, at a range of less than 50 yards, were obtained of the black bill, both binoculars and telescope being used. It had no pale tip and in any case was shaped differently from that of a Sandwich Tern, being noticeably short and thick. No call was heard. A sudden change of wind, from S.W. to N.E., had just taken place.

D. D. HARBER AND A. R. MEAD-BRIGGS.

REVIEWS.

The Greenshank. By Desmond Nethersole-Thompson (Collins, 1951). 15s.

In *The Handbook's* account of the Greenshank it was evident that much of our knowledge of the species was due to Mr. Nethersole-Thompson, but it needed the publication of this book to show how much he has learnt about one of the most difficult to study of all British birds. It combines so much interesting information and original observation in a well-arranged and readable narrative that it is certain to give lasting enjoyment and instruction to a much wider circle than those who can claim to know the bird well, or who find pleasure in catching frequent echoes and reminders of a walk with its author through the Cairngorm country. The picture given of the Greenshank's distribution in Britain is fairly detailed, and the author suggests that there may be some 300 to 500 pairs nesting in Scotland; in his own area there have lately been from 15 to 28 pairs on about 133,000 acres. Taking simply the ground actually occupied as territory, density has varied from roughly one pair to 275 acres to one pair to over 700 acres, but cases are given of four pairs on about 400 acres. For comparison the author records breeding densities per 1,000 acres of about 11-15 pairs of Crested Tits and about 16 pairs of

Scottish Crossbills. In 1935 he found 25-28 pairs of Golden Plover and 17-20 of Curlew on the same area as six pairs of Greenshank, and he mentions as normal figures for other waders territories of at least $1\frac{1}{2}$ acres for Lapwings, two acres for Oyster-catchers, between 40-70 acres for Golden Plover and 200-400 for Dotterel. These are remarkable discrepancies, and it is questionable whether they can be taken as significant without much further analysis. The full list of call-notes is usefully linked with Ludwig Koch's recordings; this example might well be followed in other cases.

The outstanding feature of the book is the thorough record and discussion of the behaviour of a number of individually identified birds over a period of years. The illustrations, especially those in black-and-white, are excellent.

E.M.N.

Greenlands Fugle. Part III. By Finn Salomonsen. Illustrated by Gitz-Johansen (Munksgaard, Copenhagen, 1951). Price for the three Parts, £14 15s. od. Map Danish Kr. 10.

The previous parts of this work (see *antea* vol. xlv, p. 182 and vol. xlv, p. 78) were difficult to follow without a detailed map, and this need has now been admirably met on the scale 1 : 5,000,000 with contours and colouring to distinguish the High-Arctic, Low-Arctic and Sub-Arctic Regions. This map, however, appears to constitute a separate publication and to be charged for extra, although the notes by the publisher are not entirely clear on this. The groups dealt with in Part III are the auks, birds of prey and passerines. Among much interesting material on auk populations it emerges that the colonies of Razorbills, which occur only on the west coast, do not exceed at most 600-700 pairs, and those of Puffins number from a few up to at most 200 pairs. On the other hand Brunnich's Guillemot has one colony at Cape Shackleton, north of Upernavik, estimated at about one million pairs, and there are about another million in other colonies despite some severe decreases through persecution. The Little Auk defcats even Dr. Salomonsen's census capacities, and he merely mentions, for example, that the Thule district has "no doubt many millions" of these birds, and quotes an estimate of five million pairs for the Scoresby Sound district. At the other extreme he estimates that there are no more than 75 pairs of Greenland White-tailed Eagles. He concludes that, roughly speaking, the dark phase of Gyr-falcon is the sub-arctic form, the grey phase the low-arctic and the white one the high-arctic form. Intermediates are relatively few, but distributions overlap considerably.

Of special interest to British readers is the full account of the Greenland Wheatear, which has been increasing and spreading north throughout the past 30 years with the warmer climate. Two ringed as nestlings near Disko have been recovered during the last five years in Portugal and Hertfordshire. The colony of Fieldfares established since 1937 in the Julianehaab district is described, and its survival is attributed to the abandonment of migration, made possible by the fact that the mean winter temperature is now more than five degrees Centigrade higher than it was 50 years ago. The Greenland Redpoll is also extending northwards (at the expense of Hornemann's Redpoll), and so is the Lapland Bunting which has lately begun to colonise the high-arctic region.

If it were possible to reprint the English text by itself without the plates and in less sumptuous paper to sell at a more reasonable price this work would be of value and interest to many British ornithologists who are unlikely to see it in its present handsome but prohibitive format.

E.M.N.



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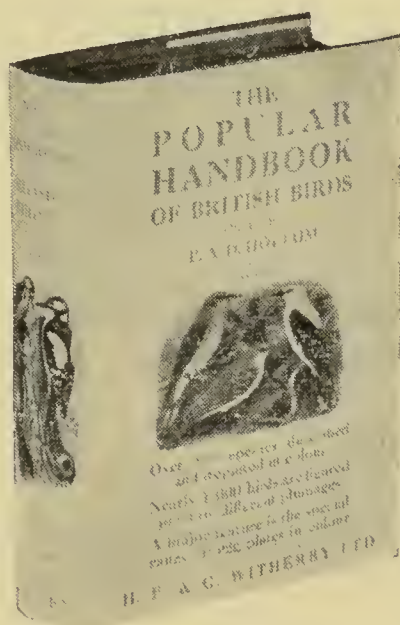


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BRITISH BIRDS

NUMBER 8, VOL. XLV, AUGUST, 1952.

REPORT ON BIRD-RINGING FOR 1951*

BY

A. LANDSBOROUGH THOMSON, C.B., D.S.C., *Chairman,*
AND E. P. LEACH, *Hon. Secretary,*

Bird-Ringing Committee, British Trust for Ornithology.

This is the fifteenth report† issued on behalf of the Committee, continuing the earlier sequence under the title "The *British Birds* Marking Scheme." It is in the form instituted last year, combining a report on the progress of ringing during 1951 with a selected list of recent recoveries such as was formerly issued separately.

MANAGEMENT.

The headquarters of the scheme remain in the British Museum (Natural History) by permission of the Trustees, and rings are inscribed "BRITISH MUSEUM NAT. HIST. LONDON." The Honorary Secretary of the Committee has continued to carry out the work of running the scheme, which continues to grow as the number of birds ringed increases. Since September, 1951, she has had the whole-time assistance of Miss Diana Syms. The constitution of the Committee remains unchanged since the additions reported last year.

FINANCE.

A generous grant from the Nature Conservancy has made possible the provision of assistance in the headquarters work, as mentioned above. The Committee is now also indebted to the British Trust for Ornithology for a contribution of £100 per annum towards expenses from its main funds. The cost of rings, as of stationery and postage, has continued to rise; but so far the increase has not had to be passed on to the users, except in the case of No. 4 rings (now 12/- per hundred). The accounts for 1951 will be published with those for 1952 in the report of the Trust.

METHODS.

The Committee approved, during the year, the issue of Additions and Amendments to the Instructions to Ringers. These were framed with a view to raising the general standard of ringing, in which a few regrettable lapses have come to notice. More stringent conditions than formerly for the admission of new ringers are likewise being maintained.

*A publication of the British Trust for Ornithology.

†The last preceding report was published in *Brit. Birds*, vol. xlv, pp. 289-310.

PROGRESS OF RINGING.

The total number of birds ringed (from October, 1950, to September, 1951) was 85,743, of which 49,364 were trapped and 36,379 were nestlings. This is a new record for any year, and the grand total since the inception of the scheme is now over a million.

The names of ringers are listed alphabetically in Table II, on this occasion without showing their individual totals. In the Committee's view it is undesirable to stress quantity in this respect. It may be said, however, that twenty-one individual ringers or groups were each responsible for ringing over a thousand birds during the year. The largest total is that of the London Natural History Society. The total of birds ringed at duck-decoys for the Wildfowl Inquiry Committee shows an increase. The relatively large number of Pink-footed Geese ringed by the Severn Wildfowl Trust is of special interest.

Dartford Warbler nestlings to the number of 22—more than in all the earlier years together—were ringed by Mr. John Ash. The following species were ringed for the first time:—Pallas's Warbler (Monks' House); Red-headed Bunting, Tawny Pipit and Subalpine Warbler (Fair Isle); Melodious Warbler (Lundy); Olivaceous Warbler (Skokholm); Little Stint (K. Macgregor); and American Water-Pipit (Saltee Ringing Station).

The supply of new rings is scarcely keeping pace with the ever growing demand, and difficulty in increasing the rate of delivery is causing the Committee concern. Many people are still retaining unused stocks of rings, in some cases issued several years ago, and the Committee would be grateful if such surplus rings were returned.

SELECTED LIST OF RECOVERIES.

The following list is again necessarily restricted to records of some individual interest, excluding many which will be of value for subsequent analysis. In some cases the records have been summarised rather than listed in detail, and in other cases attention has been drawn to points of novelty in those given. The list includes new recoveries reported up to April, 1952.

No.	Ringed.	Recovered.
	Magpie (<i>Pica pica</i>).	
342034	Haynes (Beds.), 6.7.51, young, by Bedford Sch.	Laxton (Northants), 4.9.51, [36m. N.N.W.].

Starling (*Sturnus vulgaris*).

The following list of interesting recoveries is classified in groups. The first of these, immediately below, consists of records of birds ringed in Great Britain in winter and recovered abroad in what may be presumed to be the breeding season. Within the group, the recoveries are arranged geographically in the order Finland, Norway, Sweden, Denmark, Germany, Holland.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
PM.532	Loanhead (Midlothian) 1.1.51, by R. W. J. Smith.	Larsmo, W. Finland 5.6.51 [63° 45' N. 22° 40' E].
T.2898	Edinburgh, 6.3.48, by Midlothian O.C.	Steinkjer (N. Trøndelag), Norway, 26.5.51.
12047	Ballantrae (Ayr) 23.1.49, by Nelson and Stevenson.	Near Stavanger, Norway, 4.6.51.
RL.180	York, 10.12.50, by Bootham Sch.	Ljungskile (Göteborg), Sweden, 22.5.51.
W.3987	Thornaby - on - Tees (Yorks.), 13.1.51, by P. A. Rayfield.	Near Ljungby (Småland), Sweden, 23.6.51.
W.3281	Bebington (Ches.), 25.1.51, by W. Rankin and Birkenhead Sch.	Tjörnarp (Scania), Sweden 5.6.51.
RB.444	Carlisle (Cumb.), 2.12.49, by J. Hughes.	Hälsingborg, Sweden, 17.5.51.
W.4536	Leicester, 14.2.51, by Leics. and Rutd. O.S.	Thyholm (Jutland), Denmark, 25.4.51.
W.5353	York, 27.1.51, by Bootham Sch.	Langaa (Jutland), Denmark, 21.5.51.
PW.934	Oundle (Northants), 16.12.50, by Oundle Sch.	Malling (Jutland), Denmark, 5.8.51.
21730	S. Shields (Durham), 2.2.50, by F. G. Grey.	Nyborg (Fyn), Denmark, 7.7.51.
PT.340	Leeds (Yorks.), 5.1.51, by J. R. Govett.	Near Taastrup (Zealand), Denmark, 2.7.51.
PW.444	Carlisle (Cumb.), 3.12.50, by J. Hughes.	Near Husum (Schleswig-Holstein), Germany, 7.4.51.
RK.775	Cley Bird Obs., (Norfolk), 10.12.50.	Schafstedt in Dithmarschen, Schleswig-Holstein, -5.51.
W.6279	Bebington (Ches.), 17.2.51, by W. Rankin and Birkenhead Sch.	Wremen, Mouth of Weser, Germany, 16.8.51.
11800	York, 31.1.50, by Bootham Sch.	Emden, Germany, 3.6.51.
PS.089	Cambridge, 15.12.50, by J. J. H. Wilson.	Spijk (Groningen), Holland, 24.7.51.
W.5089	Douglas, I. of M., 3.3.51, by Cowin, Crellin, Moss and Pool.	Near Lauwers Zee, (Friesland), Holland, 27.4.51.
X.4986	Cleveleys (Lancs.), 9.3.47, by R. M. Band.	Leeuwarden (Friesland), Holland, -7.51.
PA.596	Nottingham, 30.12.50, by J. McMeeking.	Schagen, Noord Holland, -4.51.
SR.526	Crewe (Ches.), 23.12.49, by F. J. Brown.	Westzaan, Noord Holland, 17.7.51.
PL.706	Bedford, 18.1.51, by Bedford Sch.	Zeist (Utrecht), Holland, 25.4.51.
W.5394	York, 31.1.51, by Bootham Sch.	South Beveland, Holland, 25.7.51.

This next group consists of records of birds ringed in Great Britain in winter and recovered abroad in early spring or in autumn or winter. The recoveries are arranged geographically as before.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
W.7114	Leicester, 1.3.51, by Leics. and Rutland O.S.	Fredrikstad, (Ostfold), Norway, 25.3.52.
X.8810	Lundy Bird Obs., 11.10.49.	Välinge (Scania), Sweden, 22.10.51.
PW.844	Oundle (Northants.), 10.12.50, by Oundle Sch.	Havndal (Jutland), Denmark, 12.12.51.
12516	York, 7.2.49, by A. and M. White	Near Aalborg, (Jutland), Denmark, -3.52.
RM.396	Douglas, I. of Man, 23.1.51, by Cowin, Crellin, Moss and Pool.	Drejö, (Fyn) Denmark, -9.51.
W.2502	Bebington (Ches.), 8.1.51, by W. Rankin and Birkenhead Sch.	Near Husum, Schleswig-Holstein, 5.11.51.
13490	Near Wolverhampton (Staffs), 13.3.50, by G. C. Lambourne.	Near Nordenham (Oldenburg), Germany, 24.2.52
W.0248	Breaston (Derby), 23.1.51, by J. B. Crompton.	Wesel (Westphalia), Germany, 22.2.52.
W.8229	Scarborough (Yorks.), 5.3.51, by A. Wallis.	Woltersum (Groningen), Holland, 21.3.52.
T.6120	Thornaby-on-Tees (Yorks.), 26.11.50, by P. A. Rayfield.	Drachten (Friesland), Holland, 5.10.51.
W.0211	Breaston (Derby), 16.12.50, by J. B. C. Crompton.	Meppel (Drente), Holland, -3.52.
V.4735	Swanage (Dorset), 24.1.50, by E. M. Cawkell.	Slagharen (Overijssel), Holland, 15.10.51.
PM.729	Fordingbridge (Hants.), 31.1.51, by Ash and Ridley.	Zuilechem (Gelderland), Holland, 4.3.52.
PL.548	Bournemouth (Hants.), 16.12.50, by Miss Jellicoe.	Near Hilversum, Noord Holland, 6.3.52.
W.0175	Trafalgar Square, London, 18.12.50, by London N.H.S.	Near Dordrecht, Zuid Holland, 20.3.51.
PM.037	Ditto, 1.1.51.	's Hertogenbosch (N. Brabant), Holland, 25.2.52.
PL.118	Cleveleys (Lancs.), 2.1.51, by R. M. Band.	Lightship S.2, North Sea, 3.4.51. [54° N, 3° 30' E.].

In the following group, the birds were ringed in Great Britain, in winter, and recovered in Ireland or at a distance within Great Britain. Eleven other records from distances up to 100 miles have been omitted.

SP.422	Fair Isle Bird Obs. 12.11.49.	Aghadowey (Londonderry) 8.12.51,
W.3121	Carlisle, 14.1.51, by J. Hughes.	Dundalk (Louth), -2.52.
PN.951	Wellington (Salop.), 9.2.51, by F. B. Clemson.	Wedmore (Somerset), -11.51, [103 m. S.].

No.	Ringed.	Recovered.
RB.256	Shipston-on-Stour (Warwick), 24.2.51, by C. A. Norris.	Duns (Berwick), 18.1.52. [260 m. N.].

The following were ringed as young, and recovered at some distance within Great Britain.

S.6481	Hoy, Orkney, 20.5.51, by A. E. Billett.	Avoch (Ross), 5.1.52. [90 m. S.].
PF.065	South Shields (Durham), 28.6.50, by J. C. Coulson.	Hessle (E. Yorks.), -5.51, [95 m. S.].

Greenfinch (*Chloris chloris*).

RINGED AS FULL-GROWN.

RM.156	Saffron Walden (Essex), 24.12.50, by A. Darlington.	Stonham Aspal (Suffolk), -5.51, [40 m. E.N.E.].
15371	Spurn Bird Obs., 15.10.49.	Near Loftus (N. Yorks.), 17.6.51, [75 m. N.].

Private Ring. Skokholm Bird Obs., 20.4.50. Wexford, Ireland, 31.7.51.

Goldfinch (*Carduelis c. britannica*).

The following fully substantiated record is remarkable in showing a considerable migration on the part of a bird of the British race, regarded as mainly resident. The birds native to the Iberian Peninsula are racially distinct.

F.3005	Oxford, 16.6.51, young, by Oxford Orn. Soc.	Pamplona, Spain, 8.1.52.
--------	---	--------------------------

Linnet (*Carduelis cannabina*).

RINGED AS FULL-GROWN.

MD.601	Seahouses (Northumb.), 12.10.51, by E. A. R. Ennion.	Gourgé (Deux Sèvres), France, 23.12.51.
NA.378	Spurn Bird. Obs., 21.7.51.	Bressuire (Deux Sèvres), France, 3.2.52.
M.0420	Ditto 25.4.51.	La Réole (Gironde), France, 7.11.51.
H.1798	Ditto 8.8.50.	Near Nérac (Lot et Garonne), France, 6.1.52.
J.6670	Lundy Bird Obs., 16.5.51.	Tolosa (Guipuzcoa), Spain, 29.10.51.
ME.236	Portland Bill (Dorset), 6.10.51, by K. B. Rooke.	Sestao (Vizcaya), Spain, 16.12.51.

Chaffinch (*Fringilla cœlebs*).

RINGED AS FULL-GROWN.

ED.874	Isle of May Bird Obs., 2.10.46.	Nassane, Norway, Oct. or Nov., 1951. [61° 7' N : 8° 3' E.].
J.4345	Skokholm Bird Obs., 29.3.51.	Åsnes, Norway, 28.8.51. [60° 36' N : 11° 59' E.].
J.5246	Great Budworth (Ches.), 18.12.50, by A. W. Boyd.	Edsele, Sweden, 28.9.51, [63° 26' N : 16° 32' E.].

No. Ringed. Recovered.

Meadow-Pipit (*Anthus pratensis*).

RINGED AS YOUNG.

NF.484 Havergate Island (Suffolk), Near Cordoba, Spain,
18.5.51, by H. G. Brownlow. 16.11.51.

RINGED AS FULL-GROWN.

MD.672 Seahouses (Northumb.), 21.10.51, Bridlington (Yorks.),
by E. A. R. Ennion. -2.52, [125 m. S.].

NA.608 Spurn Bird Obs., 26.7.51. Jerez de la Frontera,
Spain, 28.11.51.

J.0405 Halifax (Yorks.), 24.4.50, by Ditto, 21.1.51.
Halifax Sci. Soc.

Pied Wagtail (*Motacilla alba yarrellii*).

RINGED AS YOUNG.

J.8886 Haweswater (Westmor.), 8.6.50, Vizeu, Portugal. -12.50,
by R. H. Brown. [40° 41' N : 7° 55' W.].

L.5693 Clitheroe (Lancs.) Ferrol, Galicia, Spain,
17.6.51, by J. J. Boon. 17.2.52.

RINGED AS FULL-GROWN.

N.6674 Halifax (Yorks.), 13.8.51, by Moliets (Landes), France,
Halifax Sci. Soc. 6.10.51.

N.6686 Ditto, 12.8.51 Olhão (Algarve), Portugal,
26.10.51.

MA.034 Abberton (Essex), 8.10.51, by Near Gibraltar, Nov. or
C. B. Wainwright. Dec., 1951.

Great Tit (*Parus major*).

RINGED AS FULL-GROWN.

H.0557 Gibraltar Point Bird Obs., Eastbourne (Sussex),
27.10.49. 1.6.51, [170 m. S.].

K.5366 Shrewsbury, 29.1.52, by Shrews- Builth Wells (Brecon),
bury School. 11.3.52, [50 m. S.W.].

Blue Tit (*Parus cæruleus*).

RINGED AS FULL-GROWN.

M.1417 Leeds, (Yorks.), 2.1.51, by J. R. Middlewood, Sheffield,
Govett. 2.4.51, [32 m. S.].

N.1517 Reading (Berks.), 7.2.51, by Chandlersford, (Hants.).
Leighton Park Sch. 15.11.51, [40 m. S.S.W.].

L.3939 Sunninghill (Berks.), 22.8.50, by Near Dunster (Somerset),
Ash and Ridley. 25.11.51, [125 m. W.S.W.].

Pied Flycatcher (*Muscicapa hypoleuca*).

Return in subsequent summers to the place of birth or nesting has been shown in the following cases :—Of birds marked as young, 7 in the second year, 1 in the second and third, 3 in the third, 1 in the fourth and 1 in the fourth and fifth. Of birds marked as adults,

26 (25 females, 1 male) in the second year, 3 in the second and third, 1 in the third. In nearly all cases the locality was Gloucestershire and Dr. Bruce Campbell was responsible for both ringing and recovery. There is also one record showing migration :—

NA.759 Spurn Bird Obs., 21.8.51. Bragança, Portugal, 12.9.51

No. Ringed. Recovered.

Willow-Warbler (*Phylloscopus trochilus*).

RINGED AS YOUNG.

L.3387 Capel Curig, N. Wales, 1.7.51, by Les Sables d'Olonne
Cowin, Crellin, Moss and Pool. (Vendée), France, 5.9.51.

RINGED AS FULL-GROWN.

F.6131 Isle of May Bird Obs., 27.8.50. Invergordon (Ross), 6.5.51
[120 m. N.N.W.].

J.6548 Lundy Bird Obs., 22.4.51. Pontrilas (Hereford),
4.7.51, nesting,
[95 m. N.E.]

Wood-Warbler (*Phylloscopus sibilatrix*).

The following record again shows the south-easterly trend.

NJ.433 Ullswater (Westmor.), 6.7.51, Near Florence, Italy,
young, by F. C. Gribble. 18.9.51.

Whitethroat (*Sylvia communis*).

K.2539 Ruislip (Middx.), 6.7.50, young, Near Cherbourg, France,
by London N.H.S. 6.5.51.

MB.056 Spurn Bird Obs., 7.9.51, Saujon (Charente Inf.),
full-grown. France, 20.9.51.

Mistle-Thrush (*Turdus viscivorus*).

236996 Minstead, New Forest, (Hants.), Icklesham (Sussex), 5.1.52,
21.4.51, young, by R. Elmes. [100 m. E.].

Song-Thrush (*Turdus ericetorum*).

RINGED AS YOUNG.

PS.168 South Shields (Durham), 14.5.51 Ciré d'Aunis (Charente
by F. G. Grey. Inf.), France, 24.12.51.

22535 Shrewsbury, 1.6.51, by Shrews- Portland (Dorset), 8.12.51,
bury Sch. [150 m. S.].

PL.818 Waltham-St.-Lawrence (Berks.), Fécamp (Seine Inf.),
11.6.51, by J. Field. France, 6.1.52.

TK.44 Margaretting (Essex), 27.5.51, by Stourport (Worcs.),
Mrs. Upton. 7.11.51, [125 m. N.W.].

RINGED AS FULL-GROWN.

PX.596 Isle of May Bird Obs., 18.10.51. Sunderland (Durham),
3.2.52, [100 m. S.S.E.].

S.4190 Leith, Edinburgh, 17.6.51, by Toomebridge (Antrim),
J. Wightman. 9.11.51.

T.5120 Spurn Bird Obs., 2.7.49. Near Doncaster (Yorks.),
4.3.52, [51 m. W.S.W.].

No.	Ringed.	Recovered.
X.8832	Lundy Bird Obs., 23.2.51.	Llancarfan (Glam.), 15.7.51, [60 m. E.N.E.].
YX.747	Isle of May Bird Obs., 19.4.50.	North Sea, [ca. 58°N 40° E.], 2.10.51.
T.4996	Spurn Bird Obs., 9.10.49.	Beynes (Seine-et-Oise), France, 4.11.51.
RA.707	Ditto 15.10.51	Near Libourne (Gironde), France, 29.2.52.
SX.269	Gibraltar Point Bird Obs., 3.10.51	St. Médard-en-Jalles, (Gironde), France, 9.3.52.
RA.856	Spurn Bird Obs., 10.11.51.	Near Agen (Lot-et- Garonne), France, 18.11.51.
S.2071	Ditto 18.10.51	Sondica (Vizcaya), Spain, 26.10.51.
SX.286	Gibraltar Point Bird Obs., 7.10.51	Carpesa, (Valencia) Spain, 19.1.52.

Redwing (*Turdus musicus*).

RINGED AS FULL-GROWN.

PJ.536	Fair Isle Bird Obs., 28.10.51	Roermond (Limburg), Holland, 8.12.51.
SX.097	Gibraltar Point Bird Obs., 24.12.50	Near Taranto, South Italy, 7.1.52.

Blackbird (*Turdus merula*).

RINGED AS YOUNG.

The following two records show northward movement, within the country, on the part of birds in their first autumn or winter :—

S.7803	West Bromwich (Staffs.), 18.6.51, by D. R. Mirams.	Bodedern, Anglesey, 21.2.52, [125 m. N.W.].
PE.786	Maidenhead (Berks.), 25.4.51, by J. Field.	Shifnal (Shropshire), 4.9.51, [105 m. N.W.].

RINGED AS FULL-GROWN.

The following records show movement, but in cases where more than one migration season had intervened the results are not easy to interpret. There are, however, clear cases of (1) autumn migrants at Fair Isle and elsewhere reaching localities farther south and in Ireland during the winter ; (2) birds ringed on migration or in winter in this country being in Scandinavia in summer ; and (3) birds which were in this country in one winter remaining in Scandinavia in a subsequent one.

R.6964	Fair Isle Bird Obs., 29.10.51.	Near Halkirk (Caithness), 1.2.52.
PJ.541	Ditto 29.10.51	Taynuilt (Argyll), 24.11.51.
PJ.866	Ditto 18.10.51	Hollywood (Down), 25.1.52.
PJ.799	Ditto 5.10.51	Milford (Donegal), 27.1.52
246820	Ditto 10.10.49	Kilgarvan (Kerry), -.12.51

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
OE.747	Avoch (Ross), 29.10.47, by J. Lees.	Wick (Caithness), 24.6.51, [70 m. N.N.E.].
PX.306	Isle of May Bird Obs., 29.10.51	Lowestoft (Suffolk), -3.52, [310 m. S.S.E.].
XL.584	Ditto 1.4.49	Seaton Sluice (Northumb.) 29.10.51, [90 m. S.S.E.].
PF.787	Ditto 30.10.50	Magherafelt (London-derry), 25.11.51.
PA.111	Milton Bridge (Midlothian), 11.3.51, by C. Hodgkinson.	Near Banchory (Kincardine), 1.4.51, [85 m. N.].
V.6776	Masham (Yorks.), 8.8.51, by R. Chislett.	Drogheda (Louth), -3.52.
RA.300	Spurn Bird Obs., 4.11.50	Wexford, 23.2.52.
24388	Gibraltar Point Bird Obs., 14.11.49	Broughton (Peebles), 14.1.52 [230 m. N.W.].
PJ.133	Fair Isle Bird Obs., 26.10.50.	Straumsnes (Nordmore), Norway, 2.9.51.
SP.636	Ditto 11.3.50	Angvik (Nordmore), Norway, 28.12.50.
PJ.069	Ditto 23.10.50	Hareid, Ålesund, Norway, 2.4.52.
PL.594	Isle of May Bird Obs., 30.10.50	Ringsaker, Norway, -10.51.
PF.868	Ditto 2.4.51	Fana, Bergen, Norway, 29.3.52.
PF.866	Ditto 2.4.51	Frøylandsdal, Bergen, Norway, 21.1.52.
PJ.190	Fair Isle Bird Obs., 28.10.50	Kongsberg, Norway, 3.5.51.
16226	Isle of May Bird Obs., 22.10.50	Drammen, Norway, 28.5.51
PT.151	Richmond (Surrey), 27.12.50, by London N.H.S.	Island of Hidra (Vest-Agder), Norway, 21.3.52
RJ.906	Skokholm Bird Obs., 24.10.50	Grindheim, S. Norway, 23.7.51.
RA.065	Spurn Bird Obs., 9.11.49	Near Risør, S. Norway, 28.3.52.
SP.650	Fair Isle Bird Obs., 14.3.50.	Väring (Västergötland), Sweden, 16.2.51.
PT.635	South Shields (Durham), 9.1.51, by J. C. Coulson.	Near Göteborg, Sweden, 31.3.52.
PJ.312	Fair Isle Bird Obs., 9.2.51.	Kjellerup (Jutland), Denmark, 1.7.51.
W.0267	Ilkley (Yorks.), 10.3.51, by Wharfedale N.S.	Hilleröd (Zealand), Denmark, 5.7.51.
PH.608	Highclere (Hants.), 14.1.51, by D. Summers-Smith.	Near Kappeln, Schleswig-Holstein, 3.6.51.

No. Ringed. Recovered.

Wheatear (*Enanthe ænanthe*).

RINGED AS YOUNG.

Private Ring Skokholm Bird Obs., 1.7.49. Mimizan (Landes), France,
(Nested at Skokholm in 1950 21.8.51.
and 1951).

RINGED AS FULL-GROWN.

M.2361 Fair Isle Bird Obs., 31.8.51 Maubeuge (Nord), France
10.11.51.
F.0011 Ditto 21.7.49 Cañete de las Torres
(Cordoba), Spain 1.9.51.
K.9558 Isle of May Bird Obs., 30.8.50. Near Söderhamn, East
Sweden, 9.5.51.

Whinchat (*Saxicola rubetra*).

L.0402 Isle of May Bird Obs., 8.5.51, full- Near Coimbra, Portugal,
grown. 20.9.51.

Stonechat (*Saxicola torquata*).

There are the following records of a species of which very few have previously been recovered, and of which indeed, only small numbers have been ringed.

RINGED AS YOUNG.

D.9881 Troon (Ayr), 20.4.50, by F. D. Paisley (Renfrew), 31.1.52,
Walls. [23 m. N.].
BD.838 Ditto 12.5.51 Kilwinning (Ayr), 2.1.52,
[8 m. N.].

Robin (*Erithacus rubecula*).

Of the first of the following records it may be remarked that the country in direct line between the two points is mountainous.

RINGED AS YOUNG.

J.3891 Newtonmore (Inverness), 26.5.51, Tomnavoulin (Banff),
by R. Perry. 11.1.52, [36 m. N.E.].
J.3696 Edenhall (Cumb.), 12.5.50, by W. Avranches (Calvados),
Howe. France, 28.1.52.

Of the following records the last six relaté to five birds ringed during the remarkable "rush" of Robins observed on the east coast of Great Britain in October, 1951, and one in 1950. It will be seen that later in the winter the movement of these birds had extended as far as western France, eastern Spain, the Balearic Isles and Italy—altogether a most interesting series of recoveries.

RINGED AS FULL-GROWN.

M.7739 Avoch (Ross), 11.4.51, by John Queen Camel (Somerset),
Lees. 1.11.51, [460 m. S.].
E.5999 Ditto 13.3.50 Hellfield (Yorks.), 10.3.52,
[260 m. S.S.E.].

No.	Ringed.	Recovered.
M.9738	Burley-in-Wharfedale (Yorks.), 28.4.51, by V. Huddleston.	Conisbrough (Yorks.), 23.3.52, [38 m. S.E.].
L.3942	Sunninghill (Berks.), 31.7.50, by Ash and Ridley.	Tring (Herts.), 9.7.51, [27 m. N.].
MB.765	Spurn Bird Obs., 3.10.51	Near Aigrefeuille (Char- eute Inf.), France, 10.2.52.
MH.014	Ditto 13.10.51	Near Bourg (Gironde), France, 17.12.51
MB.251	Ditto 1.10.51	San Luis, Isle of Minorca, 20.12.51.
MB.288	Ditto 1.10.51	Piombino (Livorno), Italy, 12.11.51.
J.6155	Cley Bird Obs., 21.11.50	Canet lo Roig (Castellon), Spain, 7.1.52.
NS.574	Ditto 2.10.51	Alayor, Isle of Minorca, -3.52.

Swallow (*Hirundo rustica*).

RINGED AS YOUNG.

Eight birds were recovered at or near the place of marking in their second year, and 1 in its third. One of the following cases shows a rather less accurate return to the native area in its second year, and another shows fidelity to the birthplace at the age of 16 years—the bird is stated to have been seen at the same spot in intermediate seasons. The other two records show migration to South Africa in the first year.

L.7672	Maidenhead (Berks.), 27.8.50, by J. Field.	Wonersh (Surrey), 13.7.51, [25 m. S.S.E.].
LK.620	Cley (Norfolk), 13.6.35, by R. M. Garnett.	Near where ringed, 1.6.51.
NV.265	Grandhome, Aberdeen, 18.7.51, by Miss Garden.	Mimosa, Cape Prov., South Africa, 15.12.51.
NE.333	Braintree (Essex), 22.8.51, by London N.H.S.	East London, Cape Prov., 15.1.52.

RINGED AS ADULTS.

One recovered at the previous nesting locality in the following year; 1 in the following year and the one after.

House-Martin (*Delichon urbica*).

NN.287	Kirkbride (Cumb.), 29.6.51, young, by R. H. Brown.	Chesterfield (Derby), 28.9.51, [130 m. S.E.].
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Cuckoo (*Cuculus canorus*).

213168	Spurn Bird Obs., 16.5.49, ad.	Souk-el-Arba, Tunisia, 17.4.51, [36° 28' N : 8° 47' E.].
237921	Bishops Stortford (Herts.), 29.6.50, young, by P. S. Burns.	Sutton Bridge (Lincs.), -5.51, [63 m. N.].

No.

Ringed

Recovered.

Barn-Owl (*Tyto alba*).

- AN.5970 Cawthorne (Yorks.), 11.8.51, Ruddington (Notts.),
young, by M. Barras-Smith. 3.12.51, [52 m. S.S.E.].

Merlin (*Falco columbarius*).

- 335477 Callander (Perth), 1.7.51, young, Knockvennie (Kircudbr.),
by J. F. Anton. 9.10.51, [90 m. S.].

Kestrel (*Falco tinnunculus*).

RINGED AS YOUNG.

- 348554 Wooburn (Bucks.), 21.6.50, by Basingstoke (Hants.)
Thearle and Hobbs. 10.7.51, [29 m. S.W.],
349969 Sunninghill (Berks.), 9.7.50, by Broadmayne (Dorset),
Ash and Ridley. 2.12.51, [90 m. S.W.].
334052 Richmond Park (Surrey), 15.6.48, Coln-St.-Aldwyns (Glos.),
by London N.H.S. -5.51, [70 m. W.N.W.].

RINGED AS FULL-GROWN.

- 342050 Spurn Bird Obs., 22.8.51. Wisbech (Cambs.), 15.10.51,
[65 m. S.].

Common Buzzard (*Buteo buteo*).

RINGED AS YOUNG.

- 407347 Cumberland, 18.6.50, by R. H. Ingleton (Yorks.), 30.10.51
Brown. [37 m. S.].
AN.4356 Dartmoor (Devon), 20.6.51, by Newquay (Cornwall),
H. G. Hurrell. -11.51, [57 m. W.S.W.].

Montagu's Harrier (*Circus pygargus*).

- 345004 North Wales, 15.7.51, young, by Bressuire (Deux Sèvres),
E. K. Allin. France, 15.9.51.

Hen-Harrier (*Circus cyaneus*).

- AD.5640 Orkney Mainland, 23.7.50, young, Sanday, Orkney, 2.7.51.
by E. Balfour.

Sparrow-Hawk (*Accipiter nisus*).

RINGED AS FULL-GROWN.

- 344082 Fair Isle Bird Obs., 17.9.51. Rocheservière (Vendée),
France, 21.10.51.
305440 Gibraltar Point Bird Obs. 16.9.49 Valdres, Norway, 14.7.51
344519 Ditto 10.4.51 Holstebro (Jutland),
Denmark, 1.4.52.
362803 Belmullet (Mayo), 24.9.51, by Shannon Airport (Clare),
by R. F. Rutledge. 28.10.51, [110 m. S.].

Heron (*Ardea cinerea*).

RINGED AS YOUNG.

There are 10 recoveries from distances up to 46 miles from place of birth. Particulars of the following case of emigration to France have only lately been established :—

- 500820 Walland Marsh (Kent), 1939 or St. Flovier (Indre-et-
1940, by B. T. Brooker. Loire), France, 17.10.45.

No. Ringed. Recovered.

Grey Lag-Goose (*Anser anser*).

RINGED AS FULL-GROWN.

127341	Kirkcudbrightshire, 28.3.50, by Severn Wildfowl Trust.	Where ringed, 5.12.51.
130008	Ditto	16.1.51 Montrose (Angus), 18.1.52.
130006	Ditto	16.1.51 Shannon Airport (Clare), 2.12.51.
130007	Ditto	16.1.51 Skagafjord, N. Iceland, 25.5.51.
127345	Ditto	28.3.50 Lagarfljot, E. Iceland, 2.8.51.

White-fronted Goose (*Anser albifrons*).

Birds ringed at the New Grounds, Gloucestershire, in February, were recovered in November and December of subsequent winters—2 in the second, 3 in the third—in N.W. Germany, 4 of them near Leer in Ostfriesland, and the other in Schleswig-Holstein. There is also the following record showing movement within a week :—

SWT.1	Slimbridge (Glos.), 22.2.52	East Flanders (Mth. of Schelde), 29.2.52.
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Pink-footed Goose (*Anser arvensis brachyrhynchus*).

Of birds marked in October 1951, mainly in S.E. Scotland and Fife, 12 were recovered later in the same winter within 50 miles, and 27 at more distant localities in Great Britain. The records indicate a common southward trend, with some crossing to the west coast : some birds were recovered in the North of Scotland late in the season.

Other birds ringed in Great Britain were recovered there, sometimes near the original locality, in subsequent winters—38 in the second, 1 in the third, 3 in the fourth.

129662	S.E. Scotland, 15.10.50, by Severn Wildfowl Trust.	Husdalen, N.E. Green- land, 29.5.51, [73° 30' N: 21° 34' W.].
127336	Solway Area, 22.3.50	Cape Hope, N.E. Green- land, -8.51, [ca. 70° 25' N: 22° W.].
130263	S.E. Scotland, 23.10.50	Central Iceland, 25.7.51, [64° 33' N.: 18° 47' W.].
129984	Lincolnshire, 6.12.50	Ditto, 25.7.51.

(To be concluded in the October number).

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLII.

THE GREAT WHITE HERON, THE GLOSSY IBIS, THE SQUACCO HERON.

Photographed by ARTHUR BROOK.

(PLATES 61-64).

We are publishing this month photographs taken in Hungary by Arthur Brook of some of the rarer Herons. The largest and most gaunt of them, the Great White Heron (*Egretta alba*), (Plate 61) is the rarest in this country, only seven occurrences being listed in *The Handbook*. During the past year however it has been recorded in Cornwall and Dorset; details are given elsewhere in this issue (p. 291-292). The species has a world-wide distribution, but in Europe is confined to the south-east, extending west to Hungary and Austria. In 1949 however it bred in Czechoslovakia for the first time, in an area in Bohemia where in the past few years Night-Herons and Purple Herons have become established. This is perhaps another example of the northward extension of range which in a number of species is following climatic change in recent years.

The Glossy Ibis (*Plegadis falcinellus*) (Plates 62-63), is another species which breeds in all continents of the world. It used to visit this country sufficiently frequently to be known to wild-fowlers as "Black Curlew", but very few indeed have appeared in the past 20 years or more. In Europe its breeding range is rather similar to that of the Great White Heron, but it extends further west in the Mediterranean area.

The Squacco Heron (*Ardeola ralloides*) on plate 64 shows well the parti-coloured bill which is a distinctive feature in the field at reasonably close range. The bird is a rare vagrant to this country from S. or S.E. Europe; a recent occurrence is reported on page 293.

P.A.D.H.

THE POST-FLEDGING DISPERSAL OF JUVENILE TITMICE.

BY

IVAN M. GOODBODY.

THE dispersal of young birds away from their birth-places has been studied for a number of species by different authors. Kluijver (1951), Koskimies (1948), Krätzig (1939) and Plattner & Sutter (1946, 1947) have all made studies of dispersal in the Great Tit (*Parus major*), while Butts (1931) and Odum (1941) have made similar studies for the Black-capped Chickadee (*Parus atricapillus*). Butts (*loc. cit.*) and Odum (*loc. cit.*) are agreed that there is a good deal of movement of Chickadees in July and August immediately after the breeding season, and Odum (p. 533) states: "The large number of unbanded juveniles appearing in the wood in July and August is evidence of the quick separation and movement of the juveniles". Plattner & Sutter (*loc. cit.*) give tables showing that very few juvenile Great or Blue Tits (*Parus caeruleus*) move farther than 4 km. from their birthplace in the first few months of life, while Krätzig (*loc. cit.*) found for the same species that the movements of the juveniles were quite erratic in every way and that the habitat into which they moved bore no relation to the habitat of their birthplace. While many of the studies of dispersal in other species deal solely with the distance from their birthplace at which birds settle down to breed, special mention may be made of the work of Farner (1945) on the American Robin (*Turdus migratorius*), von Haartman (1949) on the Pied Flycatcher (*Muscicapa hypoleuca*) and Hornberger (1943) on the Stork (*Ciconia ciconia*). Werth (1947) analysed the ringing records for juvenile Blackbirds (*Turdus merula*) and Song-Thrushes (*T. ericetorum*) and has shown that very few birds have moved more than five miles from their birthplace in the first twelve weeks of life, but that during this period there is a steady increase in the number of birds found away from the place of ringing.

The present paper is the result of work carried out at the Edward Grey Institute, Oxford, during the spring and summer of 1950, and is an attempt to demonstrate both the rate and distance of dispersal in a wild population of Great and Blue Tits. The problem was suggested to me by John Gibb and R. A. Hinde who had found in the previous year that there was in fact a fairly abrupt dispersal movement of juvenile tits both into and out of the wood where this work was carried out. The juveniles become independent of their parents about two weeks after leaving the nest, when they begin to gather into separate flocks. The evidence suggests a very rapid explosive dispersal of young birds out from the breeding area to distances up to one mile or further. A full report of this work together with the original data for the transect

counts, etc., has been deposited in the Alexander library at the Edward Grey Institute.

STUDY AREA AND TOPOGRAPHY.

The field work was carried out on the Oxford University estate at Wytham, Berkshire, and the country immediately surrounding

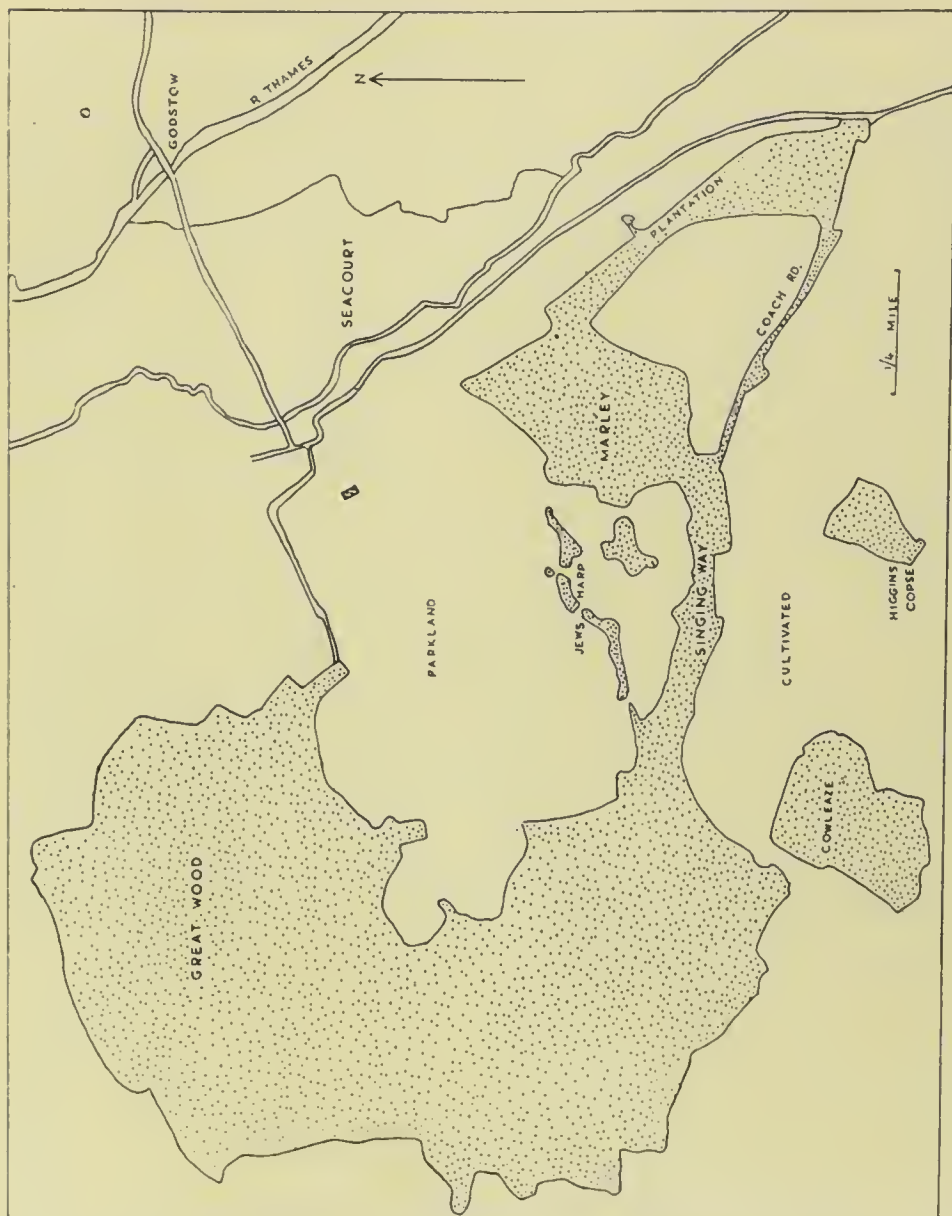
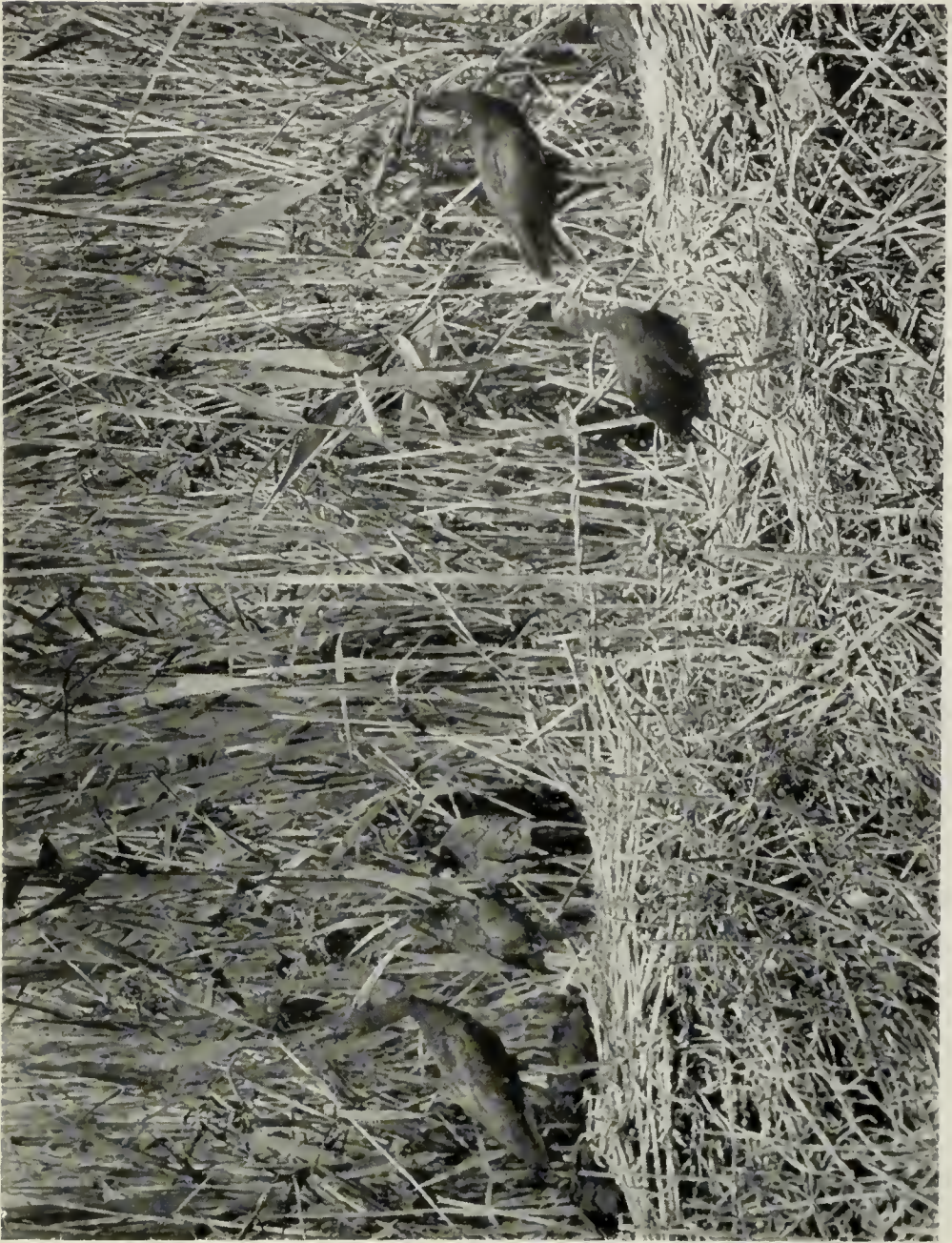


FIG. 1 SKETCH MAP OF WYTHAM ESTATE AND SEACOURT

it. The main study area (Marley Wood) consists of 55 acres of mixed deciduous woodland with four narrow belts of mainly deciduous woodland extending from it in such a way as to enclose triangular areas of arable and pasture land on the south-east and west sides respectively (Fig. 1). To the north-west lies the much



GREAT WHITE HERON (*Egretta alba*).
AT NEST WITH YOUNG. HUNGARY.
(*Photographed by* ARTHUR BROOK).



GLOSSY IBIS (*Plegadis falcinellus*).
WITH YOUNG. HUNGARY.
(Photographed by ARTHUR BROOK).





GLOSSY IBIS (*Plegadis falcinellus*).

AT NEST. HUNGARY.

(Photographed by ARTHUR BROOK).



SQUACCO HERON (*Ardeola ralloides*).
ON NEST. HUNGARY.
(Photographed by ARTHUR BROOK).



larger Great Wood connected to Marley by the Singing Way. Marley Wood is separated from Oxford city by the low-lying water meadows of the Thames. The two areas of woodland extending out from Marley on the west side are named Jew's Harp and Singing Way respectively. For further details see Gibb (1950).

MATERIAL AND METHODS.

In Marley Wood the Edward Grey Institute had already in use two hundred nestboxes for titmice (Gibb, 1950) and the population of Great Tits and Blue Tits occupying these was used as material for the investigation. In 1950, 35 pairs of Blue Tits and 32 pairs of Great Tits nested in these boxes, and 248 young Blue Tits and 191 Great Tits were successfully reared. Each young bird was given three rings before leaving the nest—a numbered ring for individual identification, and on each leg a single coloured ring which was the same for all birds in each part of the wood; for this purpose the wood was divided into three sectors so that all the young birds in sector 1 had a red ring, in sector 2 a yellow ring and in sector 3 a black-and-white ring on each leg. In this way all the young birds encountered could be recognised as having come from a particular sector of the study area. Experience had shown that when a bird was colour-ringed on one leg only, an unnecessary amount of time was wasted trying to see both legs to ascertain whether or not a bird was ringed. All juvenile Great Tits and nearly all the Blue Tit juveniles from Marley Wood were colour-ringed before leaving the nest, but at least three, and probably more, pairs of Blue Tits nested in natural holes where the young could not be ringed.

After the young had left the nest regular transect counts were made in Marley Wood and the Singing Way to determine the proportion of ringed to unringed birds in each area.* On these transect counts each area was divided into sectors; in Marley there were three sectors corresponding to the sectors used for colour-ringing, and in the Singing Way there were four sectors each 250 yards long extending from Marley to just beyond the junction between the Singing Way and the Jew's Harp. In Marley a transect usually took three hours—one hour to each sector; in the Singing Way a transect usually took two hours—one half hour to each sector. Transects were always made before mid-day as it was found that after this time birds appeared to be less active and not so easy to see. As far as possible a similar route was taken on each occasion but deviations were made from side to side to look for birds which were heard calling.

OBSERVATIONS.

The results of the transect counts have been summarized in Table I for the Great Tit and Table II for the Blue Tit. June 25th

* It had originally been intended to make counts in the other three out-lying areas as well, but this eventually proved to be impracticable.

is regarded as the date on which broods had become sufficiently independent of their parents for counts to be made of individual birds; before this date counts were made of individual broods, and in Table I and II these have all been lumped together for the three weeks June 4th to 25th. After this date counts were made of individual birds and have been grouped for fortnightly periods. For each period the figures given are the percentages of ringed birds in the total number seen. Observations were discontinued after September 16th as by this time it had become increasingly difficult to separate juveniles from adults (the juveniles having moulted most of their characteristic juvenile feathers), and hence any movements of juveniles were liable to be confused by movements of adults.

Taking the figures for the Great Tit first (Table I),

TABLE I: PERCENTAGE OF MARKED JUVENILE GREAT TITS ON DIFFERENT DATES (a) WHERE RINGED (b) AWAY FROM WHERE RINGED.

PERIOD.	(a) MARLEY WOOD (where all YOUNG RINGED).		(b) SINGING WAY (where no YOUNG RINGED).	
	TOTAL COUNTED	% RINGED	TOTAL COUNTED	% RINGED
4.vi-24.vi ...	21	71	—	—
25.vi-8.vii ...	40	72	50	8
9.vii-22.vii ...	30	33	28	14
23.vii-5.viii ...	33	18	40	15
6.viii-19.viii ...	8	37	25	16
20.viii-2.ix ...	8	37	9	22
3.ix-16.ix ...	14	14	6	0

NOTES. (i) The first period is of three weeks and refers to individual broods; each of the other periods is a fortnightly interval and refers to individual birds.

(ii) In Marley Wood the changes between the period 9.vii-22.vii and the preceding period, and between 3.ix-16.ix and the preceding period are statistically significant. Differences have been tested for significance by the χ^2 test.

it will be seen that in Marley the percentage of ringed birds had dropped from an initial 100% to 72% by the time the young were independent, thereafter continuing to drop (except for an apparent rise in August) down to only 14% by the time observations were discontinued. In parallel, the figures for Marley-ringed Great Tits in the Singing Way show a steady rise with no irregularities throughout the first five periods after the young had become independent. By the time the young were independent 8% of the birds were Marley-ringed individuals and this figure had risen to 22% by the fifth period, though during the last period only six individuals were seen, none of them ringed.

The figures for the Blue Tit (Table II) show a similar trend. The initial percentage of young birds in Marley, which were ringed, is somewhat uncertain (probably about 75%) hence the extent of the drop in the first few weeks is also uncertain. By the time the young had become independent of their parents the percentage of ringed young Blue Tits in Marley was 41%, there-

after dropping during the following six weeks to 26%, and after a small rise in the fortnight August 20th to September 2nd, it had fallen to 23% by the time observations ceased. In the Singing Way a trend in the opposite direction was apparent, but not in such a marked manner as in Marley. By the time the young had become independent 18% of the birds in the area were individuals ringed in Marley; thereafter a small rise in this percentage is discernible but with a fall during August 6th to 19th, so that in the last two fortnightly periods the figures are 28% and 25% respectively.

TABLE II: PERCENTAGE OF MARKED JUVENILE BLUE TITS ON DIFFERENT DATES (a) WHERE RINGED (b) AWAY FROM WHERE RINGED.

PERIOD	(a) MARLEY WOOD (where all YOUNG RINGED).		(b) SINGING WAY (where no YOUNG RINGED).	
	TOTAL COUNTED	% RINGED	TOTAL COUNTED	% RINGED
4.vi.-24.vi ...	26	69	—	—
25.vi-8.vii ...	94	41	78	18
9.vii-22.vii ...	91	34	73	16
23.vii-5.viii ...	51	31	101	22
6.viii-19.viii ...	100	26	47	6
20.viii-2.ix ...	42	33	36	28
3.ix-16.ix ...	61	23	16	25

- NOTES (i) See Table I.
- (ii) In Marley Wood the changes between the period 25.vi-8.vii and the preceding period, and between the period 20.viii-2.ix and the preceding period are statistically significant. In the Singing Way the changes between the period 6.viii-19.viii and the preceding period, and between the period 20.viii-2.ix and the preceding period are statistically significant.

The above figures for both Great and Blue Tits indicate a steady movement out of Marley and into the Singing Way. The latter movement is of course less noticeable as the birds from Marley scatter in various directions and only some of them enter the Singing Way.

Although most of the differences shown in Tables I and II are not based on sufficient data to be statistically significant (but see footnote to table) they suggest that something in the nature of an explosive dispersal occurred about the time that the juveniles became independent of their parents, and that while young birds from Marley disperse outwards, young from elsewhere come into Marley. In 1949 John Gibb and R. A. Hinde (personal communication) making observations on the percentage of ringed birds in Marley in successive weeks, obtained evidence for a similar explosive dispersal.

Reference should also be made to the marked drop in the percentage of ringed Blue Tits in the Singing Way in the period August 6th to 19th, and the similar, but smaller, drop in Marley at the same time. In 1949, John Gibb (personal communication) found a similar and significant drop in the percentage of ringed

Blue Tits in Marley, rising again later, and he has suggested that this may indicate a passage of juveniles from other areas going through at this time.

The initial movement away from the breeding territories starts while the young birds are still being fed by their parents. In this phase the adults and young wander freely into the territories of other birds without molestation.

OUTSIDE AREAS.

As far as possible areas outside the study area were searched from time to time to see if any ringed birds had moved out there. Obviously the further that one goes from Marley the smaller are the chances of finding ringed birds. The two principal areas searched in this connection were the Wytham Great Wood and the Thames valley area between the wood and Oxford city (here called Seacourt).

Great Wood. Extensive searches were made on three occasions (July 20th, August 6th and 17th). Out of a total of 219 juvenile tits observed no ringed birds were seen.

Seacourt. This is a large area of farmland—chiefly water meadow—with small patches of Willow (*Salix*) copse and some low hedges. No large tit flocks were seen as in the woodland areas, the birds usually being collected into small parties. Search was made on six occasions between July 25th and September 13th, and ringed tits were seen on eleven occasions. Hence there is an appreciable movement of birds into this low-lying area of hedges and fields, whereas no movement was detected into the large woodland area of the Great Wood. This could possibly be correlated with the abundant supply of water in the Seacourt area and the comparative shortage elsewhere. The furthest from Marley that any bird was recorded were two Blue Tits seen together on August 5th 1 mile N.N.E. from the centre of Marley Wood. (One of these was a yellow-ringed bird from the south-west sector of the wood, the other a black-and-white-ringed bird from the northern sector).

Other localities. In a visit to Cowleaze copse (1 mile south-west of Marley) on July 22nd, 2 ringed Blue Tits and 1 ringed Great Tit were seen out of 8 Great and 9 Blue Tits seen. An extensive search of the farmland to the south and west of the Wytham estate on August 8th gave no results, but scarcely any tits at all visit this area. In frequent visits to Higgin's copse ($\frac{1}{4}$ mile S.S.W. of Marley) no ringed tits were ever seen.

SUMMARY.

1. The post-fledging dispersal of juvenile titmice was studied in the summer of 1950 in a piece of mixed deciduous woodland near Oxford.

2. 248 young Blue Tits and 191 young Great Tits were marked with a colour ring on each leg, so that all the birds hatched in the study area could be identified as such, wherever seen.

3. Regular counts of the number of ringed and unringed tits were made in the study area and in a strip of woodland outside it, from June 4th to September 16th.

4. The evidence suggests that an explosive dispersal of young birds takes place within a week or two of leaving the nest, and thereafter birds continue to move outwards from their birthplaces.

5. A marked rise in the percentage of unringed juveniles both in the study area and in the outside area in mid-August suggests the possibility that there may be a passage of juveniles at about this time.

6. While no ringed birds were found in a large woodland area 1 mile away, several were located in low-lying water meadows $\frac{1}{2}$ mile away. The furthest away any bird was recorded was 1 mile to the N.N.E.

ACKNOWLEDGMENTS.

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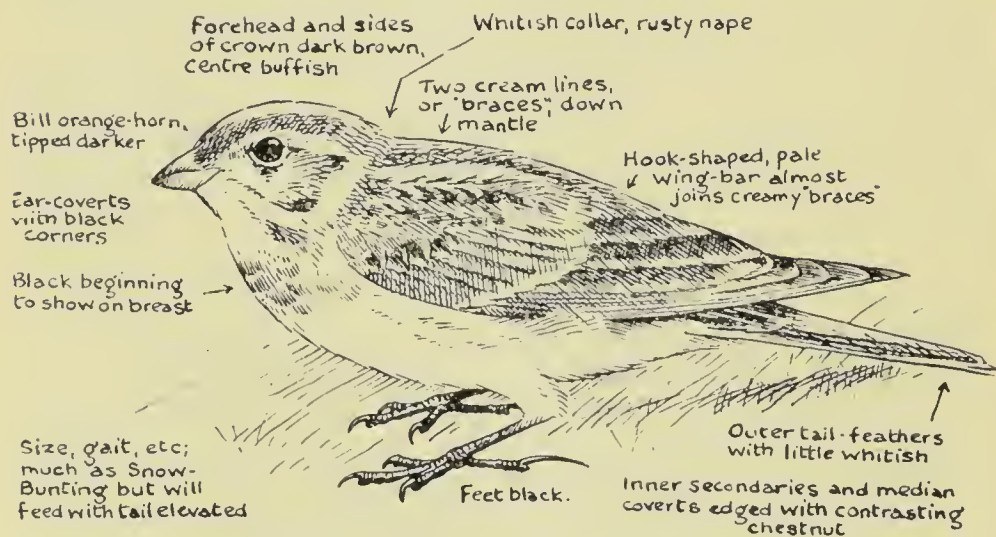
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NOTES.

Starlings attacking Chrysanthemum and Pansies.—Mr. M. J. Rogers informs us that on April 1st, 1950, he watched a Starling (*Sturnus vulgaris*) attacking a Chrysanthemum. Leaves were torn off, pecked into shreds and left on the ground, but were later carried off with other nesting material. Mr. R. G. Finnis reports that on April 25th, 1951, he watched a Starling carrying off a bunch of pansy leaves, presumably to a nest. The bird had attacked yellow pansies, flowers and buds of which were scattered about.

Exceptional passage of Lapland Buntings in Norfolk, 1950.—The late autumn and early winter of 1950 were noteworthy for the remarkable immigration of Lapland Buntings (*Calcarius lapponicus*) which was observed at Cley, Norfolk.

The first two were seen on September 13th and remained till the 25th, feeding on the seeds of sea-aster and samphire. The presence of two or three additional birds was suspected on the



LAPLAND BUNTING (*Calcarius lapponicus*)
Winter male. Drawn by R. A. Richardson.

20th while single birds were seen on the 27th and 28th. All were exceptionally tame.

The second and main arrival began in mid-October and between then and the end of the year a flock (or flocks) of 35 to 40 were seen constantly on a field of young winter wheat behind Cley beach. Without exception these later birds were absolutely unapproachable and, but for their distinctive notes, might easily have been overlooked. They fed in association with Snow-Buntings (*Plectrophenax nivalis*) and Sky-Larks (*Alauda arvensis*)

and the startling manner in which the latter species springs from beneath one's feet may have been the cause of the Laplands' nervousness.

The only notes heard were those rendered in *The Handbook* as "ticky-tick, teu", although the "ticky-tick" phrase was usually more than tri-syllabic, in fact often comprised six or more syllables. It was variously compared with "the chattering of a House-Sparrow (*Passer domesticus*)" (W. B. Alexander), "the twitter of a Linnet (*Carduelis cannabina*)" (R. S. R. Fitter) and "the toneless rattling of quarrelling Yellow Buntings (*Emberiza citrinella*)" (R.A.R.).

The clipped "teu", or "teuk!", was less frequently used except as a contact note by a lost bird anxious to join up with others, and usually quite separately from the rattle, not with it as indicated in *The Handbook*. The general pattern of these notes, which were almost exclusively flight-notes, tallied closely with the Snow-Bunting's equivalents but they were altogether harder and flatter and lacked the rippling, silvery quality of the latter.

By mid-January, 1951 all had gone, but a single bird, presumably on return passage, was seen on March 17th, 1951.

R. A. RICHARDSON, PETER JACKSON.

Short-toed Lark at Great Saltee, Co. Wexford.—On September 20th, 1951, at Great Saltee Island Major R. F. Rutledge and I had glimpses of what appeared to be a small, pale lark with an unfamiliar note. On September 23rd I was able to identify a similar bird—probably the same individual—as a Short-toed Lark (*Calandrella brachydactyla*); it was seen again on the 25th and 26th.

Though it was rather shy I was sometimes able to approach to within 20 yards, and the following description is based on a number of observations. Upper-parts pale buff-brown, narrowly streaked dark brown on forehead and crown, almost unstreaked on nape, streaked again on mantle and back. Superciliary stripe pale buff, not very conspicuous. Wings beautifully marked with rich dark brown, a feature remarked upon in the birds seen in Sussex and Suffolk (*antea*, p. 29). The colouring of the upper-parts and wings was much richer than is suggested by *The Handbook* plate, but it was, nevertheless, noticeably pale. Under-parts all whitish except for vague pale brown patches on sides of breast; if these formed a continuous band across the breast it was darker at the sides; no dark brown marks were noticed. Size about as Meadow-Pipit (*Anthus pratensis*); shape perhaps rather longer than Sky-Lark (*Alauda arvensis*). Bill short and blunt. Colour of soft parts not well seen, feet being

noted at different times as "yellowish?" and "pinkish?". There was no crest, though sometimes the wind blew up the crown feathers.

The best field character was the distinctive note. I described it as a rippling twitter, something like that of a Sky-Lark, but harder and approaching the call of a Linnet (*Carduelis cannabina*). Occasionally some more musical notes were heard. On the ground it could be picked out easily at a distance among Meadow-Pipits by its much paler and more buff colouring, while its whitish under-parts were conspicuous from front or side. The pale, rather greyish upper-parts, with dull white edgings to tail and trailing edge of wing, and white under-parts showed up well in flight. When the two species were compared in the air it looked rather smaller than a Sky-Lark, with a more rapid wing-beat. The bird sometimes associated with Sky-Larks, sometimes with Meadow-Pipits, and was sometimes alone. It kept to grass fields in the centre of the island and was occasionally lost among long grass and bramble patches.

This is the second Irish record. Mr. Kenneth Williamson writes of the weather of September 20th to 23rd: "An extensive high covered the whole of south and central Europe at that time with, of course, easterlies on its southern side, becoming south-east over the Channel and Irish Sea. Of all the stations in the British Isles you were best placed on Great Saltee to collect what drift the anti-cyclone had to offer". It will be noted that the record of a Brown-backed Warbler (below) at Great Saltee and of an Olivaceous Warbler at Skokholm belong to this period.

P. W. P. BROWNE.

Water-Pipit in Surrey.—Mr. E. I. Goulding reports that on March 24th, 1951, at Smart's Heath, near Worplesdon, three or four unidentified pipits were flushed into a low tree. One of these remained to allow several minutes' examination in bright sunshine at less than 15 yards. A very conspicuous white eye-stripe, grey back and reddish colour on the flank and belly (not extending as far as the throat), with a few streaks on the breast, showed it to be a Water-Pipit (*Anthus s. spinoletta*).

Habituated fear response in Blue Tits.—It might be of interest to record that in the course of trapping operations near Sunninghill, Berkshire, in 1949 and 1950, a number of Blue Tits (*Parus caeruleus*), became very alarmed and called repeatedly with the usual alarm call, whenever the trapper entered the wood in which the trap was located. For some time this alarm was not associated with the trapper, but as soon as it was realised that this was so, efforts were made to examine the birds more closely. It was found that two or three of them were regular daily visitors to the trap, but whereas there were only about six birds initiating the alarm, it seemed that the other birds calling were responding

to these six. A similar response was obtained whatever the clothes the trapper wore, but if he sent some other person to the trap there was no response, unless he accompanied him. This response still continued after the removal of the trap, and it was suspected that one or more of these birds also recognized the trapper in other woods in the vicinity, as there were alarm calls from ringed Blue Tits for no other apparent reason. JOHN ASH.

Woodchat Shrike in Kent.—On July 5th, 1948, I observed, on the banks of the River Stour near Sandwich, an adult male Woodchat Shrike (*Lanius senator*). Viewing it in good light, with the aid of $\times 8$ glasses, I was able to make full notes of plumage details before the bird was disturbed by a passing train. These details agreed with those of a Woodchat Shrike which I recorded in Glamorgan, in 1947 (*antea*, vol. xl, p. 275), with the exception that this bird's breast was of an even more brilliant whiteness. The bird flew off with a markedly undulating flight.

G. R. SHANNON.

Pied Flycatcher breeding in Cheshire and Staffordshire.—On May 17th, 1951, in Dibbinsdale, Wirral, I saw a male and female Pied Flycatcher (*Muscicapa hypoleuca*). On May 24th and 31st, and on June 7th both birds were seen entering and leaving a hole in a tree. The male was singing. On June 14th the male was seen entering the hole at frequent intervals but no food could be seen in the bill. On June 19th both birds entered the hole frequently. The birds were seen carrying food on four occasions and once the female emerged with a faecal pellet. On June 21st the male was seen to enter the hole eight times in twenty minutes, while the female entered three times. The male was in the hole for periods ranging from eight seconds to two minutes, with an average of thirty-eight seconds. The young birds could be heard in the hole.

This would seem to be the first definite breeding record for Cheshire, though probable breeding has been recorded (*antea*, vol. xlii, p. 57).

G. PASS AND C. B. WILLIAMS.

As there seem to be no recent records of the breeding of Pied Flycatchers (*Muscicapa hypoleuca*) in North Staffordshire the following notes may be of interest.

1948. *April 28th.* A cock seen, and heard singing in a wood near Moddershall a few miles from the city of Stoke-on-Trent. He was seen again on May 7th and 8th when he was prospecting holes in trees suitable for nesting and subsequently up to May 28th, after which he disappeared. No hen was ever seen, and he sang a great deal.

1949. *April 26th.* A pair was seen in the same area as in 1948, the cock showing an interest in a hole in a rowan tree, which aroused the fury of a pair of Blue Tits (*Parus caeruleus*). They were not seen again this year nor in 1950, but much of the wood is private and was not explored carefully.

1949. *April 20th.* Dane Valley.—Two pairs on the Staffordshire and Cheshire banks of the river respectively were seen examining holes in trees, but little singing. There was no subsequent sign of them during weekly visits up to the end of June.

1950. *May 10th.* Dane Valley.—A cock seen and heard singing around "the knoll". He spent much time examining holes in trunks.

May 17th. Three cocks seen and heard, one near "the knoll" as on the 10th, one 300 yards nearer the road above a carpet of bluebells, and another 400 yards beyond.

May 31st. The "bluebell" cock was singing particularly well, but the "knoll" cock was silent and was accompanied by a hen. The third cock had disappeared.

June 14th. No cocks seen or heard, but the hen was now feeding young in a nest on the "knoll" which was placed only four feet up in an ash trunk. As this tree was placed on a down slope to the river the nest was on foot level. Though agitated she continued to feed her young, despite the presence of two humans within eight feet of her nest.

June 21st. Hen still feeding young. Cock not seen.

June 28th. Young flown. No sign on this day or subsequently of any Pied Flycatchers.

1951. Two pairs nested. One unattached cock present until mid-June.

P. H. CHARLTON.

Brown-backed Warbler on Great Saltee, Co. Wexford.—I saw a Brown-backed Warbler (*Agrobates galactotes* ? *syriacus*) at Great Saltee Island on September 22nd, 23rd and 30th, and October 4th, 1951. On all four occasions it was in the same locality, on or near the bracken-covered hillside south-west of the Ring, and I believe that it was only the amount of cover that prevented me from finding the bird daily.

I recognised the species at once for I had got to know it well—either *syriacus* or *familiaris*—in Arabia. Examination of skins shows that the bird could not have been a Rufous Warbler (*A. g. galactotes*), but separation of the two eastern races in the field in certain plumages is doubtfully possible, so this record cannot be attributed with certainty to one or other. Most of the following details were obtained at 10 yards range or closer during the first two days. Forehead, crown, mantle, back and scapulars similar in colour to Spotted Flycatcher (*Muscicapa striata*). Rump and upper tail-coverts chestnut. Superciliary stripe fairly narrow but noticeable, pale buff, bounded above by a line darker than the crown and below by a dark brown eye-stripe. Underparts all pale greyish-buff. Primaries dark brown, edged narrowly rich chestnut-buff; secondaries and primary-coverts dark

brown, edged pale buff. Tail-feathers rich dark chestnut with black subterminal band, quite as wide as terminal white band, formed by white tips. Bill greyish-flesh, lower mandible more flesh-coloured than upper; feet flesh or pale greyish-pink. Size: about the same length as Rock-Pipit (*Anthus spinoletta petrosus*), with which it was once seen in company, but stouter in body and longer in tail.

When flushed it was reminiscent of a Hedge-Sparrow (*Prunella modularis*), but the longer, dull chestnut tail, tipped with white, and the very direct flight, low over ground or bracken, were characteristic. Frequently during the first two days the bird fed in the open, when the shape, with drooping wings and tail cocked over back, brought to mind a huge Wren (*Troglodytes troglodytes*). Behaviour, however, resembled that of a Wheatear (*Enanthe ænanthe*), listening, peering and then darting forward for some insect, and perching on rocks where present. The only food which it was seen to capture was a large yellowish caterpillar, but this was discarded. Every second or so the tail was raised quickly, usually unspread, to the vertical, or even further over the back, and then the contrast of brown back and chestnut rump could be well seen between the wings. Less frequently the wings were slightly spread and dropped forward from their normal, rather drooping, position. Sometimes the bird stood for a little while in a "dejected" attitude, with tail in line with the body; then it was obviously a warbler. After September 23rd the bird seemed to retire into the bracken; both subsequent views were obtained after disturbing it from the edge of the cover.

The only previous Irish record and the three other British autumn records all refer to the typical race, the Rufous Warbler.

P. W. P. BROWNE.

[Details of a Rufous Warbler seen in Sussex on September 12th, 1951, are to appear in our next issue.—EDS.]

Robin's nest used for two successive broods.—With reference to the notes on this subject (*antea*, pp. 175-6) Mr. W. E. Busbridge of Sevenoaks, Kent, informed me (*in litt.*) that towards the end of March, 1949, a pair of Robins (*Erithacus rubecula*) built in a nesting-box on a tree in his garden and a clutch of five eggs was eventually laid. These duly hatched and the brood finally left the nest although he believed that several fell victims to a marauding cat. However, in due course, a second set consisting of six eggs was laid in the same box which contained the original nest.

HUBERT E. POUNDS.

Great White Herons in Cornwall and Dorset.—On May 29th, 1951, I saw a Great White Heron (*Egretta alba*) on the Godrevy Marsh, near Gurthean, West Cornwall. I visited the marsh about 8.15, in clear weather. I caught a glimpse of a large, shiny white bird

at the far end of the marsh and made my way under cover towards it. When about 150 yards distant I put up a Common Heron (*Ardea cinerea*) which flew off, disturbing two others of the same species and a white bird of similar size. The Common Herons flew upstream, but the white bird, after making towards some trees where it seemed about to perch, turned round and flew towards me, passing about 80 yards from me and about 150 feet up.

I had clear views with my $\times 6$ glasses and later with $\times 20$ telescope. It was a pure white heron with yellow bill and dark legs and identical in appearance to the Great White Heron I had seen at Loe Pool in 1948 (*antea*, vol. xlii, p. 392). It gained height and flew off to westward. I did not observe a dark tip to the bill, nor was a crest visible. No note was uttered. Subsequent visits to the marsh by Mr. A. G. Parsons and myself showed no trace of the bird.

R. H. BLAIR.

On August 5th, 1951, when near Ridge, Wareham, Dorset, my attention was drawn to a very large white heron-like bird at some distance—perhaps a mile—away. In full sun it was brilliantly white, but it disappeared at once into a dyke. Later it was seen flying directly towards me. The flight seemed not quite typical of the Common Heron, but more gull-like, the wings not being brought down so far on the downstroke and not so drooped. The bird came to within 50 yards before turning aside. The impression of its size, as I noted at the time, was that it was as large as a Common Heron, or up to a quarter larger. The head, neck and breast were well seen. There was no noticeable mane or crest and there was certainly no trace of colour, though the light had now deteriorated very badly, with heavy clouds and drizzle, and in this light, at close quarters, the bird looked off-white. The bill was well seen and was yellow. It turned aside and I had a good view of the back and wings. There was just a shade of difference between the tone of the primaries and that of the rest of the wing—only as much as could be caused by the different incidence of the light—the primaries appearing a shade darker than the rest, like the two whites in the advertisement of a popular washing powder. The bird disappeared behind a wharf and I failed to find it again. I have no note on leg-colour unfortunately.

The possibility that the bird was an albino Common Heron seems to be excluded by the fact that I did not see a pink eye, which so complete an albino would be likely to have, though I had an excellent view of the head and looked carefully at it; furthermore the difference in size and especially the difference in manner and appearance in flight point to its having been a different species, the Great White Heron.

A. J. BULL.

Squacco Heron in Sussex.—On April 29th, 1951, I was attracted by a harsh call repeatedly coming from the trees surrounding a house in Manor Road, Brighton. It came from a bird which proved to be a Squacco Heron (*Ardeola ralloides*). It was seen many times from about 15 yards and upwards through $\times 6$ binoculars, and remained for eight hours, from 13.00 till dusk, though it had gone the next morning. The plumage was mainly buff, darker on the back and lighter—nearly white—on the under-parts; there was a very slightly darker line through the eye. The tail was very short. The beak was dark horn-colour, darker at the tip, and long for the size of the bird; the legs were yellowish buff. A harsh “kwark” or “kwok” was uttered about every 10 seconds, in flight and at rest. In flight the wings appeared very angular and square tipped. When alighting the bird glided to a position above a tree, closed its wings and dropped steeply into the branches, sometimes into the middle of the tree.

After making the above notes I consulted *The Handbook* and studied museum skins of all the herons on the British list. I then returned and saw the bird again and was left in no doubt as to its identity.

The weather at the time was very cold with sleet and snow showers; the wind was south-westerly. M. J. DAWSON.

Red-breasted Goose on Montgomeryshire-Shropshire border. On March 4th, 1950, Miss J. Macnair, Mr. Hotchkiss and I visited a locality on the borders of Montgomeryshire and Shropshire, where we found some 650 White-fronted Geese (*Anser albifrons*), two Barnacle Geese (*Branta leucopsis*) and a very small goose about the size of a Sheld-Duck (*Tadorna tadorna*). Seen broadside on, the main feature which caught the eye was a white lateral line dividing the dark upper-parts from the dark lower-breast. The bird then turned towards us and revealed its rufous breast and white, marbled head-markings. It was in fact a Red-breasted Goose (*Branta ruficollis*)—probably a gander since it ran at and drove off other geese which came near. Later, in flight, when its markings and small size were very evident, it led a large skein of White-fronts. As it was within about ten yards of the county boundary, we drove it, and the Barnacle Geese, into Shropshire, so that the two species may now be recorded for both counties. W. A. CADMAN.

[Details of this occurrence were submitted to *British Birds* immediately after the observation was made, and we apologise to Mr. Cadman for this belated publication due to an oversight. An apology is also due to Miss Macnair, Editor of the Montgomeryshire Field Society's *Report and Notes* for 1950, for the criticisms made (*antea*, p. iii) of the record as published there. Mr. Cadman informs us that widespread enquiries were made at the time, but these failed to produce any evidence that this bird had escaped from captivity.—EDS.]

Goosander breeding in Cumberland.—Major-General G. F. Johnson has sent evidence that a pair of Goosanders (*Mergus merganser*) nested near Brampton, Cumberland, in 1950. So far as we are aware this represents an extension of the bird's recorded breeding range, though it has been established for some time in Dumfriesshire, and Mr. E. Blezard kindly informs us that it has nested on the River Eden for some seasons.

Red-breasted Merganser nesting in Cumberland.—Mr. D. F. Owen informs us that on July 6th, 1950, he disturbed a female Red-breasted Merganser (*Mergus serrator*) from a clump of osiers at a locality in North Cumberland. The duck was followed by six four-day-old ducklings. Mr. E. Blezard has confirmed that this is the first definite record of nesting in the county, though this has been suspected for several years.

American Pectoral Sandpipers in England in 1951.—Numbers of American Pectoral Sandpipers (*Calidris melanotos*) reported in 1951 are nearly equal to those reported in the previous year when we considered that a minor "invasion" occurred (*vide antea*, vol. xlv, pp. 250-252). Records for 1951 are spread more widely through the year and include one for February in Devon and one for the end of May in Cornwall, both very unusual months for the species to occur in Britain. These two records may possibly refer to birds "left over" from the 1950 invasion or on return migration. The publication of full descriptions and photographs may have made many of the greatly increased body of observers more alive to the distinctive features of this species; in other words many more observers are now "pectoral-sandpiper-conscious" than used to be the case. It is extremely difficult to say whether this is of itself sufficient to account for the apparent increase in the number of occurrences. The records below bring the total to approximately 100, one-third of which are too recent for inclusion in *The Handbook*. The descriptions supplied to us are being filed for reference; there do not seem to be any points calling for special comment. Records include:—

CORNWALL.—One, Marazion Marsh, May 31st-June 1st (Rev. J. E. Beckerlegge; J. C. C. Oliver); one, Tresco, Scillies, August 25th (21st Report of Cornwall Bird-Watching & Preservation Society).

DEVON.—One, River Clyst, Exe Estuary, February 11th (R. F. Moore, S. C. A. Hunt, J. E. Moore); one, Exe Estuary, September 15th to 19th (R. G. Adams, R. F. Moore, F. R. Smith, W. K. Welton).

MIDDLESEX.—One, Perry Oaks sewage farm, August 31st-first half September (London N.H.S.).

SUFFOLK.—One, Walberswick, July 16th (Miss B. A. Coney, G. Jobson).

YORKSHIRE.—One, Cherry Cob Sands., River Humber, September 4th-8th (John M. Laws, Miss F. E. Crackles, G. H. Ainsworth, H. O. Bunce, J. Lord and others).

Sociable Plover in Northamptonshire.—On October 20th, 1951, at about 12.00 B.S.T., Miss C. K. James and I put up a party of some twenty Lapwings (*Vanellus vanellus*) from the eastern end

of Northampton sewage farm. With them was a peculiar looking bird which immediately separated from the flock, flew straight towards us and over our heads at not more than forty feet, then turned towards the north and flew speedily away, rising as it flew, until it was lost to sight.

Comparing notes of what we had seen immediately after the bird disappeared, we recorded the following features: (1) A large patch of white in the wing, covering, apparently, the whole of the secondaries; this was the feature that immediately drew our attention to the bird, at perhaps fifty yards distance, when it flew up. (2) Much white and some black on and round the tail as the bird flew away (H.G.A.). (The possibility occurred to me that it might be a White-tailed Lapwing (*Chettusia leucura*), a species familiar to me in North India, so I looked specially to see the colour of the tail and noted that it was not wholly white). (3) Pied appearance as it flew away from us (C.K.J.). (4) Body-colour buffish (C.K.J.). (5) Bill rather long and narrow compared with a Lapwing's (H.G.A.). (6) Wing rounded like a Lapwing's but narrower than in that species. (7) Bird more slender, and perhaps smaller, than the Lapwings as it flew up with them. C.K.J. thought she heard an unfamiliar whistle as the Lapwings flew up, but the bird was silent as it flew over our heads.

All the above features seem exactly to fit the Sociable Plover (*Chettusia gregaria*), and I think there can be no doubt that it was a bird of that species. I have seen Sociable Plovers in Egypt some years ago and as the bird flew over our heads I thought it was probably of that species but did not recall any of the distinctive characters, and was not sure that the striking wing patch fitted that bird, until I was able to consult *The Handbook* in the evening.

H. G. ALEXANDER.

Continental Oyster-catcher in Britain.—J. L. Peters, in 1934 (*Check-list*, vol. 2), records the Continental Oyster-catcher (*Hæmatopus o. ostralegus*) as a winter visitor to the British Isles, but the subspecies has not been admitted to *The Handbook of British Birds* (vol. 4, p. 421), nor has it been mentioned in the additions or the corrections in vol. 5.

However, the Continental Oyster-catcher can now with absolute certainty be included in the list. A bird, ringed *Stavanger Museum Norway* 42236 as a chick on June 27th, 1948, at Bakholmen; in Solund (61°5' N.lat—4°30' E.long.), western Norway, by Mr. T. Serck-Hanssen, was picked up dead on July 3rd, 1950, on the beach of the estuary of the River Camel, near Padstow, North Cornwall. It had then been dead about a week or so, as we are informed by Mr. H. G. T. Adams, Enfield, Middlesex, who found the bird.

A recovery in England is a little against the rule for Norwegian Oyster-catchers. Other birds, ringed partly as downy young, partly as passage migrants, have been recovered in Denmark, Holland, Belgium, northern and western France, thus following the well known south-western route. One cannot conclude that the Cornwall bird had wintered in England. Most likely on its way home, it had attached itself to a flock of British Oyster-catchers and followed them towards their breeding-grounds, crossing the Channel instead of turning east and north via Holland and Denmark.

The type locality of Linnæus' *H. ostralegus* is the Swedish island of Öland, but the breeding range of the subspecies includes the whole of Norway as well as Sweden. HOLGER HOLGERSEN.

LETTER.

VISIBLE MIGRATION IN BRITAIN.

To the Editors of BRITISH BIRDS.

SIRS,—The *Ibis* for April 1953 will include a group of papers on Visible Migration (particularly in passerine birds) as observed in various countries. The newly-formed Sub-committee on Visible Migration of the British Trust for Ornithology (see below) feels that this opportunity should be taken for summarizing existing knowledge of the subject in Britain, and a report for the *Ibis* is being prepared at our request by Mr. D. W. SNOW, Edward Grey Institute, Botanic Garden, Oxford. It is hoped to cover not only existing published information but also unpublished information. May we therefore appeal to readers of *British Birds* who have made a study of this problem anywhere in Britain to send their data to Mr. Snow by September 15th if possible and at latest by October 1st. Observations should include the main species taking part, with dates, the main directions of flight (especially in relation to wind) and numbers passing per hour where counted. Only summarized information is required. Casual records are not wanted unless of special interest. Sending these data to Mr. Snow does not, of course, in any way preclude the observer from publishing his own data in detail now or later. We feel that the proposed report should do much to advance research on the subject, and therefore hope that readers of *British Birds* will help to make it as complete as possible.

The above-mentioned Sub-committee on Visible Migration has been formed by the B.T.O. in view of the growing interest in the subject, to help to achieve greater co-ordination in observation, recording and publication. For 1952, its two aims are (i) to prepare the above-mentioned survey of existing knowledge, and (ii) to try out recording techniques with a few invited observers. We are not soliciting further help in 1952, and would stress that we are in no way seeking to discourage or prevent those individuals or groups already in the field; indeed such individual effort is in every way to be encouraged.

DAVID LACK (*Chairman*).

C. A. NORRIS.

E. R. PARRINDER.

ERIC SIMMS.

BRUCE CAMPBELL (*Secretary*).



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BIRD BIOLOGY COURSES organised by the British Trust for Ornithology. In the July issue of British Birds the cost of these courses was stated to be 3½ gns. This should be 5½ gns. and the publishers offer their apologies for any inconvenience that has been caused by this error.

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BRITISH BIRDS

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REPORTS FROM BIRD OBSERVATORIES

(Continued from page 244).

LUNDY BIRD OBSERVATORY, 1951.

BY

PETER DAVIS

IN 1951 both spring and autumn movements were outstanding. Numbers of the commoner migrants, particularly of warblers in spring and of finches and thrushes in autumn, were well above the average, and there were many unusual occurrences. Altogether 133 species were recorded on the island, the largest number yet identified in one year.

This brief report summarises the records of the rarer birds seen during the year. Further details may be found in the *Fifth Annual Report of the Lundy Field Society*, which is obtainable from Professor L. A. Harvey, University College, Exeter (price 2/6).

GOLDEN ORIOLE (*Oriolus oriolus*).

A hen in Millcombe, June 6th.

CHAFFINCH (*Fringilla cælebs*).

Many of the autumn birds were considered to be "Continental," and four males trapped November-December were ascribed to the mid-European form, *hortensis*.

[RED-HEADED BUNTING (*Emberiza bruniceps*).

An adult male from July 14th to 20th, and a female or first-winter bird from September 30th to October 3rd.]

ORTOLAN BUNTING (*Emberiza hortulana*).

Four (an adult and three juveniles) on September 11th, two juveniles on the 12th, three or four birds on the 14th, a juvenile 21st, an adult and a juvenile 22nd, two adults 28th, and an adult female October 9th and 10th. Although the total number of individuals present is not certain, there is no doubt that this was the heaviest movement of the species in the Lundy records.

LITTLE BUNTING (*Emberiza pusilla*).

Two adult males, one caught in a drop-net, October 16th; the ringed bird seen again on the 19th. First record for the island.

LAPLAND BUNTING (*Calcarius lapponicus*).

One seen and heard in flight, September 25th.

WOOD-LARK (*Lullula arborea*).

Single birds, April 3rd, 5th and May 11th, two October 21st. There is only one previous record for the island.

TAWNY PIPIT (*Anthus campestris*).

One on September 19th, and what was probably a different individual on the 29th. Second and third records for Lundy.

RED-BACKED SHRIKE (*Lanius collurio*).

A juvenile, September 14th, trapped the following day.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

Single adult females, October 5th and November 2nd. Second and third records for the island.

ICTERINE WARBLER (*Hippolais icterina*).

A juvenile trapped September 9th, and one adult the following day. An unringed juvenile seen on the 10th was caught on the 11th, and a fourth bird was watched on the 20th. There is only one previous record.

MELODIOUS WARBLER (*Hippolais polyglotta*).

One taken in the Garden Trap on July 30th. First record for Lundy.

DARTFORD WARBLER (*Sylvia undata*).

A bird of the year in St. John's Valley, October 28th. Not previously recorded.

SONG-THRUSH (*Turdus ericetorum*).

Most of the autumn birds were of a small, dark variety. An individual resembling *philomelus* was caught on November 21st.

REDWING (*Turdus musicus*).

A bird of the Iceland race (*coburni*) was trapped on November 6th.

BLACK REDSTART (*Pænicurus ochrurus*).

Single birds, February 24th, April 20th, 24th and 25th, May 20th and 21st. One September 10th, one 30th. Seen on fifteen days in October (six, 16th, the most), two November 1st, and one bird present until the end of the year.

HOOPOE (*Upupa epops*).

Three or four April 16th, one 20th and 21st, and one June 30th.

HEN-HARRIER (*Circus cyaneus*).

An adult male on November 13th. There are only two other records in this century.

GOSHAWK (*Accipiter gentilis*).

One, a probable first-year bird, on April 17th and 18th.

MALLARD (*Anas platyrhynchos*).

A drake November 10th, a duck November 18th, 19th, 21st, and two on the 23rd and 24th. The first post-war records.

BLACK-THROATED DIVER (*Colymbus arcticus*).

An immature bird seen at close quarters on November 1st. First record for the island.

GREY PHALAROPE (*Phalaropus fulicarius*).

One in Landing Cove, September 17th.

WOOD-SANDPIPER (*Tringa glareola*).

One at Pondsby, September 5th to 16th, caught on the 7th.

DOTTEREL (*Endromias morinellus*).

One at the North End, September 7th

COMMON GULL (*Larus canus*).

A first-summer bird on March 30th. There are no other records since the war.

COOT (*Fulica atra*).

One in the Hotel garden, December 15th, found in a dying condition the following day.

GREAT SALTEE, 1951.

BY

ROBERT F. RUTTLEDGE

THE island was manned from April 21st to May 19th and from September 17th to November 9th, 1951.

A daily record of local weather conditions and a schedule of migrants was maintained. All records of more notable species are fully substantiated by notes entered in the Field Record Book. Study of migrations of the commoner species received particular attention; trapping and ringing were encouraged and 477 birds of 35 species were trapped, examined and ringed.

Following southerly winds on April 24th and 25th there was a spell of N. or N.E. wind up to May 2nd. Winds were between E.N.E. and S.S.E. to 4th after which, until 11th, N.E. and E. winds were regular. On 12th, a day of variable winds, that in the evening was W. A N. wind the next two mornings veered southerly each day and was then succeeded by N.W. wind on 15th and by N.E., occasionally E., to 19th.

Winds fell light or moderate throughout the period except on May 1st, 6th and 9th when they reached forces 6 to 7. From May 11th to 15th they fell very light.

Fog was experienced all day on April 24th; haze on May 4th, 6th and 10th to 12th. Otherwise visibility was good generally. There were two showery days, otherwise no rain fell.

Up to September 27th the wind was between S.S.E. and S.W. and light generally, but increased on 22nd and reached gale force on 24th. From October 1st to 6th there was light N.E. wind followed by three days of light southerlies. A N.N.E. wind, force 3, on October 10th was followed by S.E. to S.S.W. breezes to 16th. October 17th to 23rd were, on the whole, days of N.N.W., sometimes W., winds, seldom strong. A period of southerlies set in on 24th reaching a gale from the S.S.E. on 26th and 27th. From 29th bright weather with light or moderate winds between N.E. and W. held until November 4th, when more unsettled weather set in. An E.N.E. gale in the night of November 4/5th was followed by a N.W. gale the next night and morning of the 6th. Winds then fell light or moderate E. to S.E., with rain squalls and drizzle to November 9th.

There was fog on October 16th and on the morning of 30th. Between October 3rd and 12th a few days were hazy; on others there was mist or drizzle. Visibility was otherwise mainly good.

The following observations are extracted from the records:—
STARLING (*Sturnus vulgaris*).

On April 22nd, 14, then dwindling daily. In May one to three on most days. There was a heavy movement at the end of October, reaching a peak of over 1,000 on 30th. Intensive movement was renewed on November 4th, reaching a peak on 7th (2,000) and 8th (over 5,000).

Direction of flight was very definite. Early in October the small numbers seen moved E. or S.E., after which the opposite direction, towards the mainland, was taken. From November 7th to 9th arrivals came from the S.W. and departures were to the N., N.W. and N.E. Movement took place chiefly in the early morning and evening.

GREENFINCH (*Chloris chloris*).

Small numbers October 12th to November 8th; maximum on October 28th (12).

GOLDFINCH (*Carduelis carduelis*).

A very few in the last half of April. A few most days from October 9th to November 1st. Most on October 17th (35); 12 on November 8th.

SISKIN (*Carduelis spinus*).

One ringed on October 18th remained until 21st, feeding on thistle seeds. One October 26th to 29th.

LINNET (*Carduelis cannabina*).

The small numbers seen almost daily in April and early May were almost invariably flying N.E., and in the early morning. A few almost daily, September 24th to November 9th. The chief October movements took place on 5th (100) and 23rd (70).

CHAFFINCH (*Fringilla cælebs*).

Up to October 13th the few seen were moving N. to S.; thereafter the movement was generally to N.E. On 26th birds arrived all morning from N.W., heading into a S.S.E. gale. On November 17th to 9th arrivals were from the S.W., the birds leaving the island flying N.E., passage being most marked from sunrise to 11.00 hrs., but taking place all day.

Numbers fluctuated between October 6th and November 9th, but often exceeded 50. On October 30th, 200 were noted; on November 7th, 1,000, 8th, 250 and 9th, 270.

On some days males predominated, on others females; the latter being as a rule more numerous from October 21st to 25th. Males were numerous between October 31st and November 9th.

Those seen in the field and handled on and from November 7th were clearly of a different stock from the ones previously seen. Males of the first migrants were extensively coloured "terra-cotta" on the under-parts; the later arrivals were rosy salmon-pink on the breast and flanks.

BRAMBLING (*Fringilla montifringilla*).

Individuals in very small numbers were noted on most days from October 11th to November 8th; most on November 7th (13).

[RED-HEADED BUNTING (*Emberiza bruniceps*).

A male was present on September 22nd and 23rd.]

WOOD-LARK (*Lullula arborea*).

Very confiding individuals were seen on October 15th and 26th to 28th. They were identified by John Weaving and R.F.R. by their typical note and their broad buffish-white eyestripes. The last occurrence noted in Ireland was in September, 1927, in Co. Dublin.

SHORT-TOED LARK (*Calandrella brachydactyla*).

One, September 23rd to 26th (*antea*, p. 287-288). The second Irish record.

SKY-LARK (*Alauda arvensis*).

Autumn passage started in earnest on September 26th and was noticeable daily to November 9th. Passage was at its height (after a large scale movement on October 4th) between October 11th and 19th. Little movement then took place until 23rd when a daily increase commenced and continued to 29th; thereafter a decline.

Movements were most confusing, but it seems that possibly there were two main ones, that of birds departing to the south having come from between N. and N.E., the other of birds flying to the mainland, moving N.W. and E.N.E.

TREE-PIBIT (*Anthus trivialis*).

Single birds were identified by P. W. P. Browne, who is familiar with the call note of migrants, on September 28th and October 5th. One was recorded from Tuskar Lighthouse, which is within sight of Saltee, having struck the light in the first week of October.

MEADOW-PIBIT (*Anthus pratensis*).

From April 22nd to May 10th there was a passage of numbers up to 20 to 25. A daily movement took place from September 18th to October 19th, numbers often exceeding 150. The main movement was at the end of September and in the first week of October. After October 20th numbers were small.

From September 18th to October 2nd, birds arrived from between N. and N.E.; little was seen of departure, but some took place between W. and S. Northward movement commenced on October 2nd and on 5th there was a two-way passage. On 10th a large scale movement to the east was in progress; on 18th birds arriving from the south left to N.E.

AMERICAN WATER-PIBIT (*Anthus spinoletta rubescens*).

One was present from October 8th to 16th. It was trapped, carefully examined and ringed (see p. 325). An addition to the Irish List and the second for the British Isles.

YELLOW WAGTAIL (*Motacilla flava*).

One recorded on May 3rd; two on 10th; one on 12th and 19th. From September 21st to October 1st one to four were seen each day (but on 23rd five or more and on 29th none). Arrivals were from N.E. and all were identified at close quarters as *M. f. flavissima*. Other *flava* wagtails were seen in flight on October 1st to 3rd.

PIED WAGTAIL (*Motacilla alba yarrellii*).

Seen singly on September 28th and on four days in October; two on October 14th.

WHITE WAGTAIL (*Motacilla alba*).

From three to five were on the island daily from September 18th to 28th; on 19th eleven; 22nd seven. Only adults or birds the rump of which was clearly seen are admitted. Birds not subspecifically identified passed intermittently from September 18th to October

23rd, but chiefly during the first week of October.

SPOTTED FLYCATCHER (*Muscicapa striata*).

Passage of small numbers from May 6th to 17th. Intermittent passage from September 20th to October 4th; four on 1st.

PIED FLYCATCHER (*Muscicapa hypoleuca*).

On September 20th and October 3rd there were three, then intermittent passage to October 9th. A total of 15 was seen and is noteworthy as there are only some 40 Irish records. Eight were trapped and ringed.

CONTINENTAL GOLDCREST (*Regulus regulus regulus*).

The only Goldcrest seen during the spring period was a female trapped on May 2nd.

The bird was markedly grey on the back and sides of the neck and ear-coverts, giving the impression of a grey "stole" around the neck. So similar was it to the Goldcrests that R.F.R. had examined in Fair Isle, which were clearly of Continental stock, and to skins recently seen, and so different from the birds normally found in Ireland, that it was obviously of Continental origin. The wind was N.E. increasing from moderate to strong on the night of May 1st/2nd and an area of low pressure lay immediately to the south, so that birds moving northwards along the French coast would be likely to get a drift into the Irish Sea. This forms the second record of the Continental Goldcrest in Ireland (see *antea*, vol. xlv, p. 175).

A female trapped on November 7th had much the same characteristics and when compared with a typical *R.r. anglorum* taken at the same time, and with skins, was greyer on the upper-parts and matched the typical form.

GOLDCREST (*Regulus regulus*).

One to three were seen daily from October 4th to 13th, three on 19th, two on 20th, one on November 7th and two fresh arrivals on 8th.

CHIFFCHAFF (*Phylloscopus collybita*).

Spring passage virtually ended on April 21st, a few stragglers being seen during the next week.

P.W.P.B. believes that there was a passage of *abietinus* from October 4th to 8th; an opinion based largely on the call note which was very different from the typical call of the Chiffchaff. This strikingly different note was also heard by R.F.R. and J.W. on 14th and 15th. A "northern" bird was trapped on October 18th. The crown was markedly brown, upper-parts brownish, only slightly tinged olivaceous; breast and flanks buff; belly very white; slight yellowish tinge on the under tail-coverts; throat and cheeks buff. On the same day and the next single "northern" birds were identified in the field by the same general characteristics.

At Skokholm probable "northern" Chiffchaffs, judged on the striking note, were reported on October 2nd. Others were reported as trapped at Portland Bill.

WILLOW-WARBLER (*Phylloscopus trochilus*).

A "rush" took place on April 25th (300) after a night of fog and S.W. wind. A smaller "rush" on May 2nd (80) like the first, passed on the following day. There were smaller influxes on 11th and 13th.

From a study of the weather charts it seems probable that these birds were British breeding-stock moving in.

NORTHERN WILLOW-WARBLER (*Phylloscopus trochilus acredula*).

A high percentage of these was noted. Eight were trapped and careful notes of their plumage recorded. Some variation was found, but on the whole the birds were typical of this form. The eye-stripe was very pale, upper-parts, cheeks and sides of the neck were brownish and there was a lack of yellow on the under-parts. In one case there was hardly any yellow at or under the carpal joint; in another, with an almost white eye-stripe, the only yellow, except under the wing, was a faint wash on the tibia.

Birds identifiable as *acredula* were noted from April 26th to May 19th, six being present on 13th.

As R.F.R. suspected in May, 1950, that a proportion of the Willow-Warblers were of the northern form, and as a study of the weather charts shows the improbability of westward drift, it seems likely that this race may normally follow a route so far west.

GRASSHOPPER-WARBLER (*Locustella naevia*).

One or two were seen on most days during the spring visit.

REED-WARBLER (*Acrocephalus scirpaceus*).

One was clearly seen on October 3rd by P.W.P.B. who is familiar with the species. Identification was substantiated by notes of the plain brown upper-parts, chestnut tinged rump, hardly perceptible eyestripe, white throat and whitish buff under-parts. The tail was fairly long and rounded.

SEDGE-WARBLER (*Acrocephalus schænobænus*).

Main arrivals, April 26th, May 2nd, 11th to 13th. A constant passage throughout the first half of May.

GARDEN-WARBLER (*Sylvia borin*).

One only, on May 13th, as compared with almost daily occurrence of one or more in early May, 1950. Thin passage during the first week of October.

BLACKCAP (*Sylvia atricapilla*).

Individuals appeared at the end of April and in early May. Males were noted on eight days from September 21st to November 7th; females singly on October 28th and 29th and November 7th.

WHITETHROAT (*Sylvia communis*).

Passage, which was in progress on our arrival, reached a peak on April 26th. Whitethroats were numerous on May 2nd; there was a second peak on 11th and 12th, after which numbers declined. Single birds were seen at the end of September and early in October, the last on 20th.

LESSER WHITETHROAT (*Sylvia curruca*).

The fifth to be recorded in Ireland was identified by P.W.P.B. on October 7th. This is a species with which he is familiar, but a full description was recorded in confirmation.

BROWN-BACKED WARBLER (*Agrobates galactotes*).

One, first identified on September 22nd and seen subsequently on three days, is the first recorded in Ireland (*antea*, p. 290-291).

FIELDFARE (*Turdus pilaris*).

Movement was most marked between November 5th and 9th ; largest numbers passing on 7th (200).

SONG-THRUSH (*Turdus ericetorum*).

There was only a thin movement from October 1st to November 8th, except between October 14th and 17th. All handled when compared with skins were clearly assignable to the British form (*T. e. ericetorum*).

REDWING (*Turdus musicus*).

Only a few appeared early in October. The first influx took place on 18th and 19th, a second between November 5th and 7th.

RING-OUZEL (*Turdus torquatus*).

Two to seven were seen each day from October 2nd to 11th ; one on 19th and one on November 9th.

BLACKBIRD (*Turdus merula*).

There was almost continuous passage over the whole autumn period. The heaviest movement commenced in mid-October, with peaks at the end of that month and again on November 7th and 8th. There was no indication of separate passage of sex or age groups.

WHEATEAR (*Ænanthe ænanthe*).

Passage was of small numbers only during both periods, but was most pronounced in the last week of April and the first week of May ; in the second half of September and early October, maximum numbers being noted on September 19th and 20th and on October 3rd.

WHINCHAT (*Saxicola rubetra*).

Slight movement was noticed throughout the spring period, and on most days from September 22nd to October 13th.

STONECHAT (*Saxicola torquata*).

Seen daily in small fluctuating numbers from September 20th to November 9th.

REDSTART (*Phœnicurus phœnicurus*).

A male, April 21st ; female 22nd and a pair on the next day. A female on September 30th ; a male on October 7th and single female or immature birds on 8th, 10th and 11th.

BLACK REDSTART (*Phœnicurus ochrurus*).

There was intermittent passage from October 7th to November 7th. The maximum, six, seen on October 22nd, included an adult male. This male remained on the island for three days.

ROBIN (*Erithacus rubecula*).

Single birds came on April 22nd, May 2nd and 15th. Autumn

passage was most noticeable from October 19th to 21st and from November 1st to 4th. Numbers were small and never exceeded nine on September 19th and 20th and October 1st. Those trapped and compared with skins were referable to *E. r. melophilus*.
Hirundines.

Very large numbers, mostly Swallows (*Hirundo rustica*), passed both in spring and autumn. Movement in spring was generally to N.E., sometimes N. or N.W. In autumn direction of flight was usually southward, occasionally to W. or E. On September 29th, while many were moving south, there was a determined movement to N.E. and N.N.E. On October 2nd the greatest number of any day were on the move, flying mostly E.N.E. This migration was at its height between 06.45 and 08.15 hrs. (G.M.T.).

SWIFT (*Apus apus*).

From May 1st to 8th a few passed daily, then none until 14th, after which increasing numbers were seen up to 19th when the island was vacated. Direction of flight was generally from southward to N.E.

HOOPOE (*Upupa epops*).

One, April 23rd.

CUCKOO (*Cuculus canorus*).

A few passed through intermittently from April 25th until the island was vacated on May 19th.

SHORT-EARED OWL (*Asio flammeus*).

One, April 22nd ; one October 27th and 28th. The wing characteristics were clearly noticed.

COMMON HERON (*Ardea cinerea*).

Four arrived from the N.N.W. on September 22nd, on which date six were present.

BITTERN (*Botaurus stellaris*).

One was seen at close quarters on September 25th.

TURTLE-DOVE (*Streptopelia turtur*).

One or two on most days from April 21st to 26th and from May 3rd to 14th, but there was no marked passage as in 1950. Single birds were seen on several days between September 21st and October 12th.

WHIMBREL (*Numenius phaeopus*).

The last seen in autumn were four on November 4th.

TURNSTONE (*Arenaria interpres*).

A small but constant passage was in progress from the end of April to mid-May. In autumn numbers were highest during the last week of September. There was marked migration on October 7th, 8th and 9th and again from November 5th to 8th.

LAPWING (*Vanellus vanellus*).

Migration in early October reached a peak on 6th (42) ; there was a minor peak on 24th (23).

BRITISH LESSER BLACK-BACKED GULL (*Larus fuscus graellsii*).

Except on four days passage was noted from September 18th to

October 4th, with maximum numbers on September 21st. Irregular passage from October 11th to the end of the month, usually of single birds, but of twelve on 12th and six on 17th.

GREAT SKUA (*Stercorarius skua*).

One, the white wing patches of which were noticeable on this otherwise dark brown bird with heavy flight, was seen on September 22nd.

[The observations made at this station are of such interest for comparison with those of the recognised Bird Observatories that we are glad to include here Major Ruttledge's notes.

Little mention has been made in these reports from the Observatories of the remarkable "rush" of Robins on the east coast in October, 1951, but this will be fully discussed in a paper by Mr. David Jenkins to be published within the next few months.—EDS.].

REPORTS ON THE MOVEMENTS OF SOME COMMONER SUMMER MIGRANTS AT BRITISH BIRD OBSERVATORIES IN 1951.

(Continued from page 256).

REDSTART.

Observatory	Bird/days	Max. No. recorded in a day	No. of days on which recorded	earliest	latest
Fair Isle	... 50	11	16	2 v.	29 v.
Isle of May	... 167	30	25	23 iv.	24 v.
Monks' House	... 15	2	9	21 iv.	12 v.
Spurn Pt.	... 26	6	13	20 iv.	20 v.
Gibraltar Pt.	... 7	2	6	22 iv.	19 v.
Cley	... 9	2	7	18 iv.	11 v.
Skokholm	... 3	1	3	20 iv.	7 v.
Lundy	... 9	3	7	20 iv.	21 v.
Jersey	... 1	1	1	2 v.	2 v.

The pattern of Redstart (*Phoenicurus phoenicurus*) movements was very much less clear in 1951 than it was in 1950 when, it will be remembered (*antea* vol. xlv, pp. 244-245), there were found to be two rather clearly defined "waves" reaching the east coast Observatories.

In 1951 the first arrivals reached the western stations and the eastern ones from Monks' House southward between April 18th and 22nd, and the first were recorded from the Isle of May on 23rd.

A major movement reached the Isle of May on May 2nd, when 30 were recorded, but this was only faintly reflected by two at Fair Isle and there were none at the more southerly stations. Movement continued fairly strongly at the Isle of May for the next nine days, but this was not matched at Fair Isle and only faintly reflected further south towards the end of the period.

The main movement at Fair Isle was later—from May 16th to 24th—but was on nothing like the scale of the movement recorded

in 1950, 11 being the greatest number recorded on any one day. This was only faintly reflected at the Isle of May and was not matched at all further south, only a very few single birds being recorded after mid-May.

The tendency for greater numbers to be recorded at the more northerly stations was again seen, but the symmetry of the cline was upset by the Isle of May receiving a far larger number of Redstarts than Fair Isle in the first half of May.

Information about sex-ratios is insufficient for any conclusions to be drawn.

R. K. CORNWALLIS AND A. E. SMITH.

BLACK REDSTART.

WITH our present limited knowledge of the migrations of the Black Redstart (*Phaenicurus ochrurus*) and the virtual absence of ringed bird recoveries, apart from the one recorded (*antea*, p. 236), the following attempt to correlate the records from ten observation points is necessarily a tentative one and may well prove incorrect in many respects as new facts become known. As suggested by Fitter (*in litt.*) Black Redstarts on spring migration might be assigned to one of two main categories :

(a) Wintering birds dispersing.

(b) Wind-drifted accidentals from the Continent.

Broadly speaking, therefore, occurrences before the middle of April come in category (a) and after that date in category (b). There is undoubtedly a considerable overlap between these two categories and waves 1 and 2 (see below) are perhaps best grouped under the heading " intermediate period " until more is known about them. This theory, of course, takes no account of British breeding birds which, in any case, can be discounted in May and June except at observatories near to known nesting localities.

In category (a) Jersey and Skokholm/Dale had single birds apparently wintering, but one in North Norfolk on January 27th was something of a mystery for in the writer's experience a January Black Redstart in this locality is unusual. Lundy's bird of February 24th was probably a wintering bird beginning to move.

In the Cley area the first Black Redstart of the spring appears with almost clockwork regularity during the third week of March, and 1951, with a bird on the 19th and 20th, was no exception. Jersey reported a male on the 24th and had the other Observatories been manned during March this movement might well have proved more widespread than the available data suggest.

Thenceforward to the end of the season birds occurred in five small, but well-defined waves, the first and second, as noted above, being of doubtful status.

Wave 1

Cley and district ... March 30th to April 1st (♂).

Spurn ... April 6th (1).

Fair Isle ... April 2nd (1), 5th (1), 7th to 8th (1).

Wave 2.

Skokholm and Dale April 11th to 19th (except 12th) (1).
 Cley and district ... April 15th to 17th (♂).

There can be little doubt that *Wave 3* consisted of wind-drifted Continental birds. It was certainly the most widespread of the spring involving five of the nine Observatories :

Wave 3.

Lundy ... April 20th (1), 24th (1), 25th (1).
 Skokholm and Dale April 24th (1).
 Monks' House ... April 21st (♂).
 Isle of May ... April 21st to 23rd (1).
 Fair Isle ... April 24th (♂).

Spurn, Gibraltar Point and Cley appear to have lain outside its scope.

Wave 4 affected a comparatively narrow front:

Spurn ... May 8th (1), 9th (1), 12th (1).
 Monks' House ... May 12th (♀).
 Isle of May ... May 3rd (♂), 6th (1), 10th (1).

The fifth and final wave brought single birds to Lundy and Gibraltar Point (the latter bird a ♀) on May 20th.

On the seven occasions when sexing of the birds in these five main waves was possible the five males occurred before May 3rd and the two females after that date which, although to be expected, is not without interest. There were the usual " end of season stragglers " as follows :

Lundy ... June 4th (1).
 Cley and district ... June 14th (♂ singing).
 Cley and district ... July 22nd (juv. possibly Norfolk-bred).
 Fair Isle ... June 13th (♀) " . . . the latest spring record for the Island."

I am indebted to R. S. R. Fitter for reading the original draft and for making useful suggestions since incorporated.

R. A. RICHARDSON

WHEATEAR.

THE first Wheatear (*Enanthe cenanthe*) to be recorded by an Observatory was seen in Jersey on February 13th, 1951. This bird can, however, hardly be called a forerunner of the general spring migration, and the first birds of the spring migration proper were recorded on Lundy on March 18th, on Skokholm on the 19th, at Cley on the 21st, and at Seahouses on the 26th. No Wheatears were seen at Spurn until March 30th, or at Gibraltar Point until

April 1st. The Isle of May recorded its first birds on April 4th and Fair Isle on April 6th, 20 days after the first had been seen on Lundy.

At the south-west Observatories, the peak of the first wave of migration was recorded on Lundy and Skokholm on March 30th, and this was followed by another smaller wave on April 4th-5th on Lundy and on the 4th-6th on Skokholm. A third marked wave was recorded at both Observatories on April 10th. For four or five days after this, migration apparently slackened.

On the east coast, the first wave of migration was recorded at Cley on April 4th, Gibraltar Point 4th-7th, Spurn 5th-6th, on the Isle of May on the 8th and on Fair Isle on the 10th. This was followed by a second wave on the 8th at Cley, on the 10th at Gibraltar Point and at Monks' House on the 12th on the Isle of May and on the 15th at Fair Isle. Another small wave was recorded on the Isle of May on April 15th and on Fair Isle on the 21st, but there is no indication of this further south. Gibraltar Point had a small movement from April 19th-22nd. There was a peak in numbers on the 21st and 24th at Spurn and apparently at Monks' House on the 24th. On the Isle of May there were peaks on the 23rd and 25th, and on Fair Isle on the 30th, although there had been a decrease in numbers recorded on the 26th.

The second part of the spring migration which would seem to include, at least on Skokholm, a large proportion of "Greater" Wheatears, began at Lundy on the 17th-18th, on Skokholm on the 19th and on Saltee on the 22nd (Ruttledge, 1951). This wave in the S.W. was spread over a week on Lundy and about six days on Skokholm, and the large number recorded over the period may have been a result of several individuals remaining on the islands for several days. Saltee records evident passage on April 29th and May 1st, when Lundy and Skokholm record an increase in numbers. Further waves of migration passed Lundy on May 3rd, 6th, 10th and 14th, and Skokholm on the 6th, 10th and 11th. Saltee records more passage on the 7th.

On the east coast very little of this later migration was recorded at Cley, Gibraltar Point or Monks' House, and Spurn was not manned between April 29th and May 4th, when a movement might have been recorded there. On the Isle of May there was an increase on the 2nd and 3rd and on Fair Isle on the 2nd and 4th when 12 "Greater" Wheatears were caught (the first to be trapped at Fair Isle that year). Another wave was recorded on the 5th and 7th at Spurn, and on the 10th at Fair Isle. An increase at the Isle of May on the 12th was followed by an increase on the 14th on Fair Isle. There was an increase on the 19th at Spurn which was followed by an increase on Fair Isle on May 23rd.

Generally speaking, it would seem that the pattern of the spring migration in 1951 followed fairly closely that of 1950. It would seem that the Wheatears reach the S.W. Observatories slightly

earlier than the southernmost of the east coast Observatories. This would agree with Stresemann's (1948) idea that Wheatears following the Atlantic seaboard move up earlier than those following transcontinental routes.

P. J. CONDER.

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STRESELMANN, E. (1948). "Die mittlere Erstankunft von *Lanius collurio*, *Muscicapa striata*, *Oriolus oriolus*, und *Ænanthe ænanthe* in Europäischen Brutraum." *Vår Fågelvärld*, 7(1) : 1-18.

LESSER WHITETHROAT.

THE only Observatories to have more than one record of a single Lesser Whitethroat (*Sylvia curruca*) in the spring of 1951 are shown in the following table :—

Observatory	Bird/Days	Maximum no. recorded in any one day	No. of days on which recorded	Middle date
Fair Isle	102	50	20	May 22nd
Isle of May	17	7	8	May 10th
Spurn	9	2	7	May 2nd
Lundy... ..	4	2	3	April 29th

These figures show a trend similar to that of 1950 (*antea*, vol. xlv, pp. 240-241). A column for the "middle date" (half way between the earliest and latest records) has been added and this indicates that the migration is later in the north. The earliest record was Lundy, April 17th, and the latest Fair Isle, June 10th.

A. G. S. BRYSON.

PIED FLYCATCHER.

THE pattern that emerged in the spring of 1950, when numbers of Bird/Days increased progressively northward to a maximum of 45 at Fair Isle, did not hold for 1951. The table shows the Isle of May with 62 Bird/Days from May 2nd to 11th, and Fair Isle with five only from May 17th to 22nd. Apart from the period April 21st to 25th, after which conditions held up most passage migration of passerines for a week, the Isle of May had birds before the more southerly Observatories on May 2nd (when one also occurred on Holy Island). Spurn was two days later than the Isle of May, but three days earlier than Cley or Gibraltar Point; birds were in Jersey on May 15th and 17th. The latest dates of all were at Lundy and on the Yorkshire coast (May 27th-29th). Whether this irregular reversal of the pattern of 1950 was in part due to the return southward of birds that had reached a zone where conditions were neither suitable for crossing the North Sea, nor for remaining, we cannot even surmise from the data available.

G. H. AINSWORTH AND RALPH CHISLETT.

SPRING PASSAGE OF THE PIED FLYCATCHER, 1951

		April		May																						Total				
		21	22	23	24	25	2	3	4	5	6	7	8	9	10	11	14	15	17	18	19	20	22	25	26	27	28	29		
		♀ ♀																												2
5	4	I I I I I																												13
None																														—
		♂ ♂ ♂ ♂																												3
		♂ ♂ ♀																												3
		2 2 3 I I																												9
		I I																												2
		♂ ♀ ♀ ♀																												4
		♂ ♂																												2
		I 2♂ 2♂ ♂ ♂ 6 20 8 8 8 6																												63
		♂ ♂ ♂ ♂ ♂ ♀ ♀																												5

The south-western Observatories had earlier arrivals and considerably larger numbers of Spotted Flycatchers than those on the east coast, and were obviously concerned to a greater extent with the British breeders, though some of the late birds may have been destined for Northern Europe.

Jersey recorded its first bird on May 6th, and a small influx took place simultaneously at Lundy and Great Saltee, Skokholm having a single bird on the 7th. This minor wave began in light easterly winds, which became strong on the 8th, and no birds were recorded on the 9th.

On the 10th a new arrival began at Lundy, a similar movement affecting Saltee from the 11th, and Skokholm from the 13th. Numbers reached a peak at Lundy (seven) and Skokholm (three) on the 14th, and again at Skokholm (three) and at Saltee (seven) on the 16th. The wave had expired by the 18th.

Lundy had five birds on the 19th, an influx apparently not shared by Skokholm, whilst the Welsh station had three on the 21st, and a peak of six or more on the 22nd, days when Lundy recorded only single birds. As this wave at Skokholm died away, Lundy had a new incursion, and over 20 birds were present on the 24th.

Further small movements affected Lundy from May 26th to 28th, May 30th to June 2nd, and June 5th to 6th; and Skokholm, May 28th to 30th, June 4th, and 7th to 8th.

In the Trent valley near Nottingham, where "the bird is only a passage migrant along the hedges," P. W. P. Browne was keeping a daily watch. He had two Spotted Flycatchers on May 10th, and two again the next day. Single birds were seen on the 13th, 16th and 17th, and two on the 21st. One is tempted to connect the first birds with the first arrival in the south and west from the 6th onwards.

Records from the northern and eastern stations suggest that they deal mainly with passage migrants. Most of the British birds are on their breeding-grounds before the main movements on the east coast take place.

Cley reported no Spotted Flycatchers and Gibraltar Point only one, in the spring of 1951; and probably most of the birds at the north-eastern Observatories had made the North Sea crossing north of southern England. The majority of these birds occurred during or soon after periods of easterly weather, and may well have been diverted from the main stream through western Europe. There is small evidence of south-north movement in the figures supplied by the Observatories.

The Isle of May had a single bird on May 7th, and Spurn one on the 13th; on the 19th Spurn again had one bird, and Fair Isle its first two of the season. On the 23rd a more widespread arrival took place, affecting Spurn (one bird), Monks' House (two) and the Isle of May (four). Monks' House had three birds on the 24th, two on the 25th, one on the 26th; Spurn two on the 26th, five on

the 27th, and Gibraltar Point one on the 25th. There was one later bird at Monks' House, on the 31st.

At Fair Isle there had been a single bird daily from the 21st to the 24th. Two were recorded each day from the 25th to the 28th, and may have represented the same influx which had started on the east coast two days earlier. L. S. V. Venables at Dunrossness in south Shetland had one bird on the 26th.

On the 29th there were three birds at Dunrossness and one at Fair Isle; on the following day both places had five birds, their peak figures for the spring. Two were present at Fair Isle on the 31st, and single stragglers on June 5th and 20th. The expedition to Foula on June 13th reported a single Spotted Flycatcher.

PETER DAVIS.

RECORDS OF SPOTTED FLYCATCHER, SPRING, 1951.

Observatory	Bird/Days	Maximum	Days of Observation
Fair Isle	24	5	14
Isle of May	5	4	2
Monks' House	9	3	5
Spurn	10	5	5
Gibraltar Point	1	1	1
Cley	0	0	0
Skokholm	34+	6+	16
Lundy	94+	20+	29

PATTERNS OF SPRING MIGRATION.

BY

R. K. CORNWALLIS

IN 1950 and again in 1951 the British Bird Observatories have exchanged information about the occurrences of selected species of birds. A study of this collated information appears to throw some light on the pattern of migration to and through the British Isles in spring.

The simple conception of this pattern of spring migration is one of a south to north movement. The birds, it is assumed, enter England at points along the south coast and proceed northwards until they either reach their breeding-grounds in Britain, or, if they do not remain to breed, strike north-west to Iceland or north-east to Scandinavia from our northern coasts. This is often assumed in ornithological writings to be what happens, though, doubtless owing to the paucity of hard facts, the subject is a neglected one and is usually passed over in a few words, in contrast to the lengthy and detailed descriptions of autumn migrations.

The following facts, however, appear not to fit this simple pattern.

That is not to say, let it be emphasised, that migration on the simple pattern does not take place ; it undoubtedly does ; but it will not explain all the facts.

1. As shown in the accompanying table (figures from *Brit. Birds*, vol. xlv, pp. 236-245), certain birds which breed in Scandinavia and occur in Britain both as summer residents and as passage migrants, were recorded on spring migration in 1950 in greater numbers at the more northerly Bird Observatories, the numbers decreasing rather regularly as one considers each more southerly Observatory in turn.

			Pied Flycatcher	Garden Warbler	Lesser Whitethroat	Common Redstart
Fair Isle	...	...	45	1	60	314
Isle of May	...	...	23	11	30	168
Spurn	...	...	13	2	7	38
Gibraltar Pt.	...	...	0	3	3	24
Cley	...	...	0	0	3	3
Skokholm	...	...	0	7	0	1

N.B.—Numbers are Bird/Days, i.e., birds seen more than once are not excluded.

2. It is common, when waves of birds are recorded at the east coast Observatories, for these to occur on approximately the same date at all of them and not progressively later at the more northerly stations (Redstarts, Pied Flycatchers, 1950, *British Birds*, *loc. cit.* ; Fieldfares, Ring-Ouzels, 1951, *Fair Is. Bull.*, 1951, No. 2).

3. The greatest numbers of some birds are often observed, particularly at east coast stations, on dates when British breeding birds of the same species have already started nesting, even when the breeding-ground lies further north than the Observatory (e.g. Pied Flycatcher, *British Birds*, *loc. cit.*).

4. At Gibraltar Point the direction of diurnal migration in the spring as well as in the autumn is almost invariably to the south-west. At Cley it is from east to west. In north Lincolnshire it is more orthodox, north-west along the south bank of the Humber (B. A. Pye, *L.N.U. Transactions*), but at Spurn both northward and southward movements are seen.

The most likely explanation of these facts seems to be that, as well as receiving migrants in accordance with the simple pattern, the British Isles also receive " drift-migrants " which, aiming for their Scandinavian breeding-grounds, are drifted westwards across the North Sea by the wind.

For this to operate to maximum effect, weather on the Continental coast must be favourable to northward migration, but further north the birds must meet with westward drift. When an anticyclone is centred over Scandinavia and is therefore in the path of the northward migrating birds, the birds as they come within its influence are drifted westwards by the clockwise winds blowing along its southern edge. This effect is often reinforced by anticlockwise winds at the front edge of a depression or secondary depression moving rapidly

up the English Channel and into the North Sea, a very common type of weather.

Movements of birds in these types of weather conditions were seen in the springs of both 1950 and 1951. In 1950, after an April characterised by cyclonic conditions to the north and north-east of Britain and a thin passage at all stations, May showed two periods when the type of weather described above prevailed. These were from May 5th-12th and 19th-27th, and they coincided remarkably closely with the main movements at Fair Isle and with the passage of Pied Flycatchers and Common Redstarts at all stations. In 1951 this type of weather at the beginning of May and again on 20th brought rushes of warblers and other species to Fair Isle and the Isle of May (*Fair Is. Bull.*, No. 2).

It is likely that drift of this kind affects nocturnal migrants much more than it does diurnal ones for they, presumably, must rely for navigation principally on " preferred direction " and not on coastal and other " guiding-lines," and are therefore more likely to be sent off-course by the invisible forces of wind-drift. The directions of diurnal migration at Cley and Gibraltar Point, however, seem to indicate that some diurnal migrants are also subject to drift of the same kind.

It seems reasonable that this drift-migration should be more marked at the more northerly Observatories and that it should not affect the western stations at all. For, if winds are such as to bring birds to the southern and western stations, it will be less likely that they will be such as to encourage birds to leave the Continental coast and migration will be much reduced or completely inhibited. For maximum effect the drift must only be encountered when the birds are well embarked on their journey.

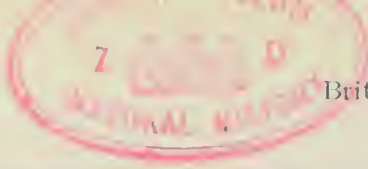
Drift-migration of this type also explains the coincidence of dates on which " waves " of birds are recorded reaching the east coast, and explains the movements after British breeding birds are already nesting, these later movements being composed of quite different, probably Scandinavian, breeding populations.

Summary.

The occurrences of a number of species in spring at the British Bird Observatories are examined, and it is suggested that they can best be explained by the British Isles receiving " drift-migrants " that are drifted by the wind westwards across the North Sea in addition to " simple pattern " migrants moving northwards through the country from our southern coasts.



BUFF-BACKED HERON (*Ardeola ibis*). ANDALUCIA, S. SPAIN.
(Photographed by G. K. Yeates).



UPPER.—BUFF-BACKED HERON (*Ardeola ibis*). TYPICAL ASSOCIATION WITH CATTLE. S. SPAIN.

LOWER.—NESTING COLONY, SHOWING THE REED NESTS.
(Photographed by G. K. Yeates).



BUFF-BACKED HERON (*Ardeola ibis*). NEST IN TREE. S. SPAIN.

(Photographed by G. K. Yeates).



BUFF-BACKED HERON (*Ardeola ibis*). ANDALUCIA, S. SPAIN.
(Photographed by G. K. Yeates).

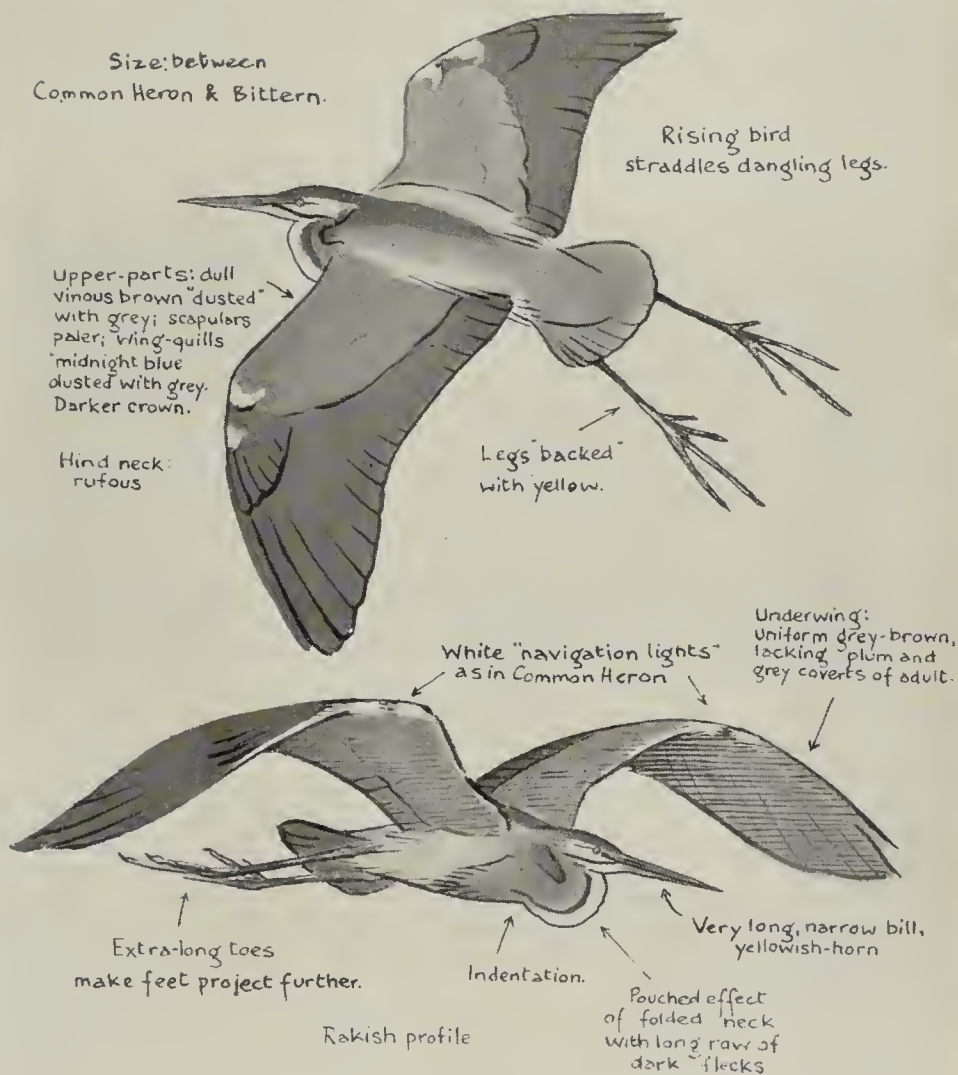


BUFF-BACKED HERON (*Ardeola ibis*). ANDALUCIA, S. SPAIN.

Photographed by G. K. Yeates.



BUFF-BACKED HERON (*Ardeola ibis*). ANDALUCIA. S. SPAIN.
(Photographed by G. K. Yeates).



IMMATURE PURPLE HERON, (Cley, 10.v.1951.)

R. A. Richardson

PURPLE HERON (*Ardea purpurea*). IMMATURE, CLEY, NORFOLK,
MAY, 10th—12th, 1951.

(From a sketch by R. A. Richardson).

(See p. 331).



UPPER. — YELLOWSHANK (*Tringa flavipes*). ALTRINCHAM, CHESHIRE,
SEPTEMBER, 1951.

(See p. 332).

LOWER. — NIGHTINGALE (*Luscinia megarhynchos*). AN UNUSUAL NEST, MADE
ENTIRELY OF REEDS. NORFOLK, 1940.

(Photographed by P. Clarke).

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLIII. THE BUFF-BACKED HERON.

(Photographed by G. K. YEATES).

(Plates 65-70).

The Buff-backed Heron (*Ardeola ibis*) has a more southerly range than the other herons on the British list, extending into Europe only in South Spain, where the photos in the present issue were taken. They are kindly supplied by G. K. Yeates. In addition to providing portraits of these dumpy, heavy jowled little herons, a good impression is conveyed of the crowded nesting colonies and the bird's habit of feeding among cattle. This characteristic association renders very appropriate the Indian name of Cattle Egret. Even when cattle are not present the birds regularly feed in flocks on quite dry ground, and may thus be separated at long range from other white herons. P.A.D.H.

[The Purple Heron (*Ardea purpurea*) has already featured in this series (*antea* vol. xl, plates 26-31), but we are glad to include among our pictures of the rarer herons a sketch made by R. A. Richardson showing the characteristics of a bird noted in Norfolk.

Eds.]

NOTES ON THE GREY WAGTAIL.

BY

HENRY BOASE

THE main object of these notes is to give an account of display behaviour seen in recent years in Angus and Perthshire. Some details relating to plumage, nesting and migration are also given.

Plumage.

After recent autumn moult, individuals may show a definite wine-pink tinge on the breast : seen in late August, 1910, on September 11th, 1915, and September 10th, 1944. This tint is quite fugitive and it appeared that the bird showing the colour on September 11th had lost it by September 18th. The colour of the breast varies somewhat in depth, and in the earlier stages of the spring moult the fresh plumage can show almost an orange tint.

Calls.

Various single notes as "chik," "chisk," "t'sit," sometimes a double note "tissit." The juvenile call is duller as "chip," "chit."

Song.

Trills of three or four notes with a tit-like quality. An unpaired male at a nesting place gave repeatedly a phrase "tche-tche-tche"; variants of this heard at other times are "t'sit-t'sit-t'soo" and "t'sit-t'sit-t'see"; four note trills are "t'swee-chwis-chwis-

chwis " and " t'see-t'see-t'see-t'say ", the last given by a male in gliding flight on July 3rd in Strathtummel, at which time he was in company with a fledged brood. Once a more elaborate song was heard from a bird perched some twenty feet up in a birch : it was noted as " chum-chum-chiddy-chiddy-chum-chiddy-chum." The singer was in full view and seen to be singing, but the song does not seem to have much in common with the more usual forms. Song has been heard from a male in winter plumage on February 23rd, but is heard most frequently in March and April. Late song from males in company with fledged broods has been heard on June 3rd and July 3rd.

Display.

Initially, the song is used as a signal to passing females, as given by a solo male on April 12th repeated about once a minute. On April 3rd, 1949, a chase involving three birds was noticed near a nesting place, and the flight of one bird seemed unusual. All three birds had alighted together on a flat-topped dyke in full view. One bird was indifferent ; a second bird, rich in breast colour, was crouching with head low and tail depressed, facing the third bird, which was very erect in pose. Presently the chase was resumed and after a flight of about twenty yards the pursuer turned and flew in gliding flight back to the dyke—tail almost closed, wings very wide-spread and only the primaries fluttering with small amplitude. Later, the pair was seen and clearly the brightly coloured bird was not one of them. The male was giving the " t'sit-t'sit-t'see " trill.

This special flight form was used by the male singing on July 3rd, 1939, in Strathtummel.

On May 23rd, 1948, a more elaborate display was seen. The female was seen first, collecting whitish fibres at the water's edge on a concreted strip forming the bank of the stream. A male appeared from the far side in fluttering flight with the body plumage noticeably fluffed out. He alighted near the female and ran towards her with head held low and thrust forward, wings arched and fluttering, feathers of the rump raised, and the tail depressed and partly spread, finally rising in fluttering flight and attempting to tread her. She refused and turned away ; the male alighted and ran a little way in his previous attitude, but with wings closed and drooped, and then the action ceased. The male was calling during the display, but the noise from a spillway near by and a background of bird-song made the details uncertain.

On another occasion, at the same place (April 7th, 1946), a male and female were seen apart, having been located by their calls. Presently the male flew over quite normally and attempted to tread the female without any preliminary display. She refused, and the male perched near by for a minute or two, then rose in flight to about 60 feet and departed calling. The female remained perched for at least a minute, then departed on the same line of flight.

Pairs are usual from the end of March, but couples have been noted on February 24th, and March 4th, 11th, and 13th. Two birds seen together on March 20th had well-marked black throat patches as if both were males. A party of four was seen on March 26th, 1914; a trio on April 10th, 1922, and solo males on April 12th and 19th. Some of the males seen in March are still without the black throat patch.

Nesting.

Most of the nests found have been in holes in masonry at a spillway; twice nests have been seen on a ledge of a bridge structure, once in a rock cranny. The earliest date of building was April 2nd, 1950, for an unlined nest which was lined with feathers on April 9th; another on April 5th, 1913; otherwise, most of the nests have been from mid-April onwards with the latest date of fresh building May 15th. On April 3rd, 1921, an old nest was found to have had the lining removed as if in preparation for rebuilding. The lining has been of hair in most instances with only one or two feathers.

Eggs have been laid at intervals of a day, with clutches up to six eggs. The earliest eggs found are—two, on April 12th; in another nest, three eggs on April 15th. The nest containing two eggs on April 12th was deserted after a third egg had been laid. A new nest was found near by on the 19th and this contained three eggs at least by the 23rd but there is no certainty that this belonged to the original pair.

Both male and female have been seen sitting on the eggs, and once, at least, incubation began before the clutch was complete. No satisfactory incubation period was noted as the bird seems prone to desert; the figures available suggest a period of about eleven days rather than the twelve/thirteen days given in *The Handbook*.

My earliest date for juveniles out of the nest is May 12th—equivalent to a full clutch about 19th April. In one instance, the young were fed for at least four days after leaving the nest.

Feeding.

During breeding season, on the rocky beds of small turbulent streams; after the young have flown, some may feed on pasture near a stream in Highland glens. During passage, may occur on wide river gravel beds; even on ploughed land. In winter, small numbers feed at fresh water runnels on the sea shore or in tidal estuaries: some remain in or near nesting places throughout the winter.

Migration.

Some wintering birds may be in the nesting places in January and February: most arrivals at an Angus nesting site have been from the last days of March until mid-April, occasionally in the third week, if weather is bad. At Pitlochry, passage to nesting places was still in progress in mid-April, 1946, and late April, 1950. Early scattering after nesting has been noted by July 1st; the main dispersal is in August and the first half of September. Some

broods may remain together until the second half of August ; single birds remain in the glens well into the autumn, as at Glen Clova on September 14th, about Pitlochry in the last week of September, and in Strathardle on October 2nd. Wintering birds have been seen at favourite locations on the Tay Estuary by mid-September and records from October onwards generally refer to the same individuals. Small numbers have been detected in westward flight at Kingoodie on the Tay Estuary in August.

Flocks.

Anything more than a family party of six to eight birds is unusual. A party of fifteen was seen near Dundee on July 11th, 1918, and a similar party at Tayport about September 10th, 1946.

NOTES ON THE COURTSHIP DISPLAY OF GULLS.

BY

HENRY BOASE.

The Handbook deals in considerable detail with the display of the Herring-Gull (*Larus argentatus*) quoting the observations of Goethe, Portielje, and Darling. The notes on Common Gull (*L. canus*) and Great Black-backed Gull (*L. marinus*) refer mainly to the minor differences observed, compared with the behaviour of the Herring-Gull. The main outline of the behaviour detailed had been noted at breeding places.

Some display has been noted in the wintering places in the Tay estuary quite away from the nesting areas. There is, for instance, a mutual display where the two birds posture alike. In its simplest form, it was noted on January 12th, 1919, when two adult Herring-Gulls in moult to breeding plumage, posturing with stiffly erected neck, bill level, swam to and fro in close company, sometimes in line ahead, sometimes abreast, sometimes in echelon. The same behaviour may occur on the mud-flats or the sands, and is generally accompanied by a muffled wailing, whether from one only or from both, has not been determined. On April 7th, 1923, this mutual display ended by the two birds facing and interlocking bills, tugging and wrestling for a minute or so.

Two variants of a display, where a sudden up-throw of the bill takes place, while a sharp barking note is uttered, have been seen.

In the one instance, on March 11th, 1933, one adult walked towards a second adult standing on the flats, all the time calling. On near approach, it extended the neck stiffly erect and jerked the bill up vertically, calling a single sharp note. The upjerk and call were

repeated several times. On the other occasion, on March 9th, 1924, the two adults stood side by side, one in a normal standing attitude, the other with extended neck at 45-50 degrees, with the bill at right angles. At intervals, it swung the head and neck in line abruptly, giving then the sharp barking call. The inactive bird seemed indifferent; the other took flight and flew around, rejoining it at least twice, and finally departed alone.

On April 2nd, 1949, two adults in fine plumage were standing on the mud, facing one another each nibbling or stroking the other about the base of the bill and the cheek, and at times interlocking bills and gently shaking their heads. At other times, both, but one more often than the other, dipped the bill in the water at its feet and tossed the bill, then resumed the play. This was repeated at least three times in two minutes. A muffled wailing was heard during the display, but owing to wind and other calls could not be definitely associated with it.

A minor display, seen on January 3rd, 1943, suggested the later displays associated with nest building. Two adults were standing together on a sea-wall. On approach, they dropped on to the tide about five feet apart, the one behind the other. The leading bird was calling a muffled "wah" note; the other held a frond of seaweed in its bill. After a dozen or twenty calls, the leading bird fell silent and the second bird called for a like period. Then both departed together.

A different action altogether was seen on March 9th, 1936. At least three adults were circling low over a field, calling excitedly "ee-ah" rising to a short, sharp "yeh". One bird alighted, and with arched neck showing a marked kink a short distance from the base of the head, the open bill pointing downwards, walked alone stiffly and called a muffled "oo-ee-ah" wail. A second bird alighted and walked behind the first with spread wings raised over the back, calling with head and neck in normal pose. The third bird continued to circle overhead, and presently all three departed.

A more elaborate ritual combining a mutual display and an active individual performance was watched on March 8th, 1925. Two adults were standing together on a seaweed-covered dyke. At times, one or both postured with stiffly arched, kinked neck and down-pointing open bill, uttering a soft, muffled, wailing note, walking to and fro on the dyke, sometimes side by side, sometimes one behind the other, sometimes facing and approaching one another. At times the wings appeared to be slightly raised from the sides. Presently one bird sat down carefully as on a nest, rose, walked round about the place with the rear of the body raised and the head held low as if examining the spot, and at intervals tugged at the seaweed fronds. The other bird got excited and tore at the seaweed, just dropping the pieces secured and seeking more, pulling and wrenching with wide-spread swaying wings, but always abandoning the pieces secured. Twice, this bird stopped weed-tearing

and called with outstretched inflated neck and wide-open bill in line at about 45 degrees, roaring sobbing notes, only to stop abruptly and resume weed-tearing. Unfortunately, the finishing of the incident was not noted. This display is clearly one of those usually associated with the nesting place and its neighbouring "stand." That it should have developed on a retaining dyke at a shore dump covered at each tide seems to rule out the site as the "releaser" for the display. Neither was there any assembly of Herring-Gulls in the immediate neighbourhood to stimulate the performers.

The power to display may linger quite late in the summer, for on August 31st, 1919, two seeming adults, one at least showing winter plumage, behaved as follows. The winter plumage bird was "brooding" on a bunch of seaweed with the second bird near by, and both were calling a muffled "weh-ah." The sitting bird rose and turned towards the other, but not facing, and both called with extended neck and wide-open bill in line at 45-50 degrees, still calling the same note. The first bird then turned away and with extended arched neck and down-pointing bill, led a slow, waddling march over the mud, the second bird at times assuming the same attitude, but mostly with neck extended at 45 degrees and bill at right angles, calling at intervals the same wailing note. The performance lasted about ten minutes and ended by the first bird taking flight. It seemed to turn as if to see if the other were following but the latter departed in another direction.

All these forms of display were seen on tidal water or on mud and sand twenty miles or more from the nearest nesting site on the Angus coast.

Farren in his *Bird Watching* details the routine of the Black-headed Gull (*L. ridibundus*) in the early stages of occupying the nesting colony which he studied. He stated that the birds leave the colony in the evening to roost on fields some distance away, and return to the colony in the early hours of the morning before dawn. In the area about the Tay Estuary, there is marked fighting from the landward to the estuary at dusk during most of the year and this behaviour continues on a large scale to mid-April at least. In the second half of March and in April, the birds on the estuary, whether on the tide or on the mud-flats, become very noisy from deep dusk until about 23.00. So far as can be seen in the poor light, the birds gather in dense throngs and from these gatherings comes loud clamour for two or three hours. So far, there is no evidence of departure from the river until grey dawn. On one or two occasions watch was kept near the north shore in late March during the night without any indication of passing birds, whereas at grey dawn and at first light many do pass over to the landward. Dr. John Berry comments on this behaviour in an article which appeared in the *Scottish Naturalist* in 1931, but made no remark on the clamour. This noisy interlude must be some form of mass display, a social occasion, in the early stage of the breeding cycle. Unfortunately the darkness

makes it impossible to ascertain the details of the behaviour.

[We have received two other short notes recording displays from gulls in winter quarters away from the breeding grounds. Mr. C. F. Tebbutt records a "wild flight display" by a Common Gull at Eltisley, Cambs., on January 11th, 1950; after its wild flight this bird twice attempted unsuccessfully to settle on the back of another. Mr. T. A. W. Davis records a case of an adult Black-headed Gull in summer plumage displaying to an immature in first-winter plumage; the display agreed well with the "forward display" described in *The Handbook*. This incident occurred on March 5th, 1951, at Dale, Pems., fully twelve miles from the nearest breeding colony.—EDS.]

NOTES.

Some notes on the behaviour of House-Sparrows.—These notes (which are additional to those already published, *antea*, vol. xlv, pp. 18-19; 369-372) summarize intermittent observations on House-Sparrows (*Passer domesticus*) in Britain (work in progress) and in Egypt (in the winter of 1949-50, at Adabiya on the Gulf of Suez).

(1) An association of a male with two females, first noted at Adabiya on February 2nd, 1950, was watched regularly until March 16th when effective observation ended until mid-April. The birds were seen together constantly in their daily routine. For the first month it was apparent that the relationship was predominantly social; no display was forthcoming from the male and the birds moved about quietly together, the two females following the male from point to point. Their attachment to him was noticeable, if he flew off they immediately went after him and settled near, and, in addition, the two females were very close companions, keeping together and occasionally foraging without the male. When on February 28th a third female joined the association for a day, she too followed the male about but kept apart from the other two and thus introduced a third unit into the relationship. The first real appearance of apparent sexual factors was noted on March 7th, when the male displayed to one of the females (which reacted aggressively) while the other perched near. From then until March 16th, when observations ended, the association continued in its new character with more display, an increased localization of activities to the area of the future nest-site and signs that one of the females at least was beginning to respond sexually. When I revisited the site on April 13th, the male had only one mate (at the initial site anyway) and nesting was well under way.

The House-Sparrow is stated by Daanje (*Ardea*, 30: 1-42) to be

mainly monogamous. The few recorded cases of polygamy may have arisen from incidents such as that given above. The whole subject, however, deserves further study.

(2) The reactions of the Adabiya male at the nest site on April 14th, when the female was probably brooding small young, is worth noting. As I approached, he would lean forward and, with puffed out throat and open bill, give a chattering note. In the air, the bird would fly round in a type of "impeded-flight" uttering a flat chirping, and on three occasions this behaviour drew up to eight other sparrows (both sexes) to the immediate vicinity, where they joined the male and demonstrated near me. This incident was another illustrating the noticeable "contagiousness" of sparrow behaviour.

(3) The noisy, bowing display of the male House-Sparrow with head in and bill pointing, tail elevated, wings drooped and shivering (figured in Daanje, *Behaviour* 3:75) is well known. The activity of one or more males before a single female may consist solely or partially of such posturing, but the object of the participants, at higher intensity, is to peck her cloaca. Cloaca-pecking is obviously much more common than formerly supposed: published records are mounting; I have seen it, or attempts at it, on several occasions, and Derek Goodwin informs me that in his experience such behaviour is frequent. While on occasions the female will submit passively to such treatment (see Cooke, *antea*, vol. xl, p. 308), generally her responses to both display and attempts at cloaca-pecking consist mainly of pecking back indiscriminately and gaping. Bevan (*ibid.*, p. 309) gives instances of the rough handling males may receive and I have seen one tossed unceremoniously (still displaying!) right over the female's shoulder by a quick pull of the bill. Bowing display may occur when the female is thus uncooperative or when the male's behaviour is of relatively low intensity. The encounters are very contagious, additional males being drawn to the scene by the rapid excited calling and the flurry of movement. (The calling is so characteristic that my dog has learned apparently to expect unwary sparrows on hearing it for she immediately rushes out into the garden and tries to catch one.) At times group activity has resulted after a disturbance by some predator (*e.g.* man, cats) when a male has been flushed near a female and has pursued (and once attacked) her in flight, displaying when she alighted, further males then joining in. A more or less identical bowing display is found in the Tree-Sparrow (*P. montanus*) (Daanje, *loc. cit.*) and the Spanish Sparrow (*P. hispaniolensis*) (personal observation), while Goodwin has seen cloaca-pecking in the latter.

As *The Handbook* remarks, House-Sparrow sexual behaviour is not well understood. The whole range of activities outlined briefly above seems basically aggressive. Daanje (*loc. cit.*) has suggested that the male's display has threat character and that the female reacts to it as such. Although the bowing display is

not typically a pre-coital one and may take place fairly regularly in the winter months, such posturing and cloaca-pecking presumably have some sexual function and most records of the latter activity indicate that it occurs just before and during the breeding-season. I would tentatively suggest that, like courtship-feeding, cloaca-pecking may be derived from behaviour, functional at a later stage in the breeding-cycle, *i.e.*, the pecking of the young to stimulate defæcation. I have in fact seen a male peck at the cloaca of a youngster just out of the nest. While courtship-feeding itself has not been recorded in the House-Sparrow, I have seen a female unsuccessfully solicit food from her mate, when the pair were feeding chicks, though this was probably caused by my presence.

K. E. L. SIMMONS.

American Water-Pipit in Ireland.—On October 8th, 1951, I noticed a strange pipit among the Rock-Pipits (*Anthus spinoletta petrosus*) at the Landing on Great Saltee, Co. Wexford. It was trapped and ringed (N9337) on October 9th, trapped again on October 11th, and seen by me on October 13th. Major R. F. Rutledge and Mr. John Weaving saw it, October 13th to 16th. We believe it to have been an American Water-Pipit (*A. s. rubescens*), the first for Ireland.

I examined the bird in the hand as thoroughly as I could and, on January 5th, 1952, consulted Mr. R. Wagstaffe at the Liverpool Public Museum. He produced a large series of skins of various races of *Anthus spinoletta*, and very kindly read my description and measurements. From these characters alone, he was not prepared to state that the bird was certainly of the race *rubescens*, on the principle that no racial determination, purely by plumage description and measurements, of an isolated specimen outside its normal range, can be really valid without at least reference on the spot to adequate comparative material. However, it will be seen below that in all ways that have been checked, this bird was typical of *rubescens*; and the evaluation of this record depends partly on other characters of the bird. After taking these into consideration, in my opinion the cumulative evidence is so strong that the identification approaches as near to certainty as is possible without killing the bird. In all events, it seems to eliminate the other races on the British list. I therefore feel justified in giving a somewhat lengthy and detailed report.

Description, etc.

Upper-parts olivaceous-brown (buffer or browner than with Rock-Pipit), feathers with dark (blackish) centres except on hind neck, rump and upper tail-coverts, latter being somewhat darker and browner with very faint light edgings to longest. *Sides of head*—Lores greyish; pale buff streak from bill to above eye, paler buff streak extending back *c.* 8 mm. from eye, both paler than underparts; warm buff moustachial streak. On right side of head, a derangement of feathers above ear-coverts caused a small dark mark. *Under-parts* buff, deepest on under tail-coverts and flanks. Feathers immediately below bill whitish with some black bristles; those of lower throat, breast and flanks with black-brown central streaks, otherwise under-parts unstreaked. Axillaries and under wing-coverts whitish-grey (silvery) washed buffish-yellow.

I have examined 14 skins of *rubescens* and consider the colour of the under-parts of this bird to have been typical of the race. Moreover, I have compared two feathers taken from the under-parts of the Saltee bird with skins, and the colour matches with feathers from a very buff specimen of *rubescens*.

Wings. Primaries, secondaries and primary coverts dark grey-brown, paler on edge of inner web and edged pale buff on outer web, narrowly on third to fifth primaries, more broadly on secondaries. Greater coverts black-brown, tipped and edged on outer web warm buff-brown, median and lesser coverts black-brown tipped broadly pale buff. Little sign of abrasion on remiges or primary coverts. *Tail-feathers.* Outer pair black-brown with a long wedge of white covering most of outer web and much of inner web and with a slight pale brown tinge near tip of outer web. Penultimate pair with a 20 mm. wedge of white on inner web, outer web opposite this grey-brown, otherwise black-brown with yellow-buff fringe on outer web. Other tail-feathers blackish with slight buff fringe to outer webs, central pair browner edged vaguely pale buff. Tail-feathers ragged at the ends with some shafts slightly protruding. I have measured the tail-feathers of 8 skins of *spinoletta*, 11 of *rubescens*, three of *blakistoni*. On the penultimate feathers, only *rubescens* is fairly constant in showing much pure white (up to 24 mm.): *spinoletta* usually shows much less white (0 to 12 mm.) but one specimen at Liverpool, labelled of this race, has wedges 22 and 27 mm. long. Reference to standard works shows that Eurasian Water-Pipits in general have little white on penultimate tail-feathers. Thus for *spinoletta* (Europe) "a small white mark at the tip" (*The Handbook of British Birds*); *couellii* (Middle East) "only a very small spot at the tip" (*Nicoll's Birds of Egypt*); *blakistoni* (central, south and east Asia) "only a slight speck of white at the tip, prolonged on the edge of the outer web into a very narrow buffish border" (*La Touche A Handbook of the Birds of Eastern China*); *japanicus* (East Asia) "an irregular whitish or pale greyish spot at the tip" (*La Touche, op. cit.*).

Soft Parts. Bill black-brown, yellowish-flesh at base of lower mandible, inside mouth pinkish. Iris very dark brown. Orbital ring whitish. Tarsus dark reddish-brown, toes blacker brown, greyish-flesh on under sides.

Measurements. Right wing 86.5 mm.; left wing 88.5 mm. Bill (from feathers, along culmen) 11.7 mm. Tarsus 21 mm. For the last two characters, I have measured four skins of *spinoletta* and four of *rubescens* at the National Museum, Dublin, and have tried to do so in just the same way as on Saltee. *Spinoletta* gives bill (from feathers) 12.8 to 14.3 mm., tarsus 24.3 to 24.9 mm.; *rubescens* gives bill 11.2 to 12.5 mm., tarsus 20.0 to 22.0 mm. (the fact that *The Handbook* gives 22-23 mm. for the tarsus of this race shows that I have used a slightly different method of measurement).

Weights. On October 9th at 08.50 hrs. G.M.T., 20.57 gm., on October 11th at 17.00 hrs, 22.53 gm. Thirteen specimens of *petrosus*, weighed at Saltee about this time, varied between 23.12 and 27.14 gm. (average 24.96 gm.), indicating that the bird was of somewhat slighter build.

Field Description.

The bird was watched, for long periods, feeding with Meadow-Pipits (*Anthus pratensis*) and Rock-Pipits, at 10 yards range and closer. Compared with the latter it first gave the impression of being much buffer, particularly on underparts, and with a very buff moustachial streak. The streaking above was less noticeable and finer, looking more like rows of spots; below streaking less extensive (absent from belly) but more sharply defined. Superciliary stripe about as Rock-Pipit. Pale buff edgings to wing-feathers much more prominent than on Rock-Pipit. White in tail did not show much except when the bird stretched itself (when white wedges on penultimate feathers were just as striking as white on outer pair). Some-

times a white line was visible on one side or other of the tail as the bird fed. In flight the white showed well at times, but not invariably. Feet rather redder brown than with Rock-Pipit.

The build was much slimmer than, but the length about the same, as a Rock-Pipit. Combined with a slightly shorter bill and oscillatory motion of the body, this created a distinctive wagtail-like effect. The Rock-Pipit does wag its tail. But this bird did so almost constantly, except when walking fast, at a rate of 8-10 wags per five seconds.

Behaviour.

The pipit was much addicted to one small area of a large bank of rotting seaweed just on the high-tide line at the base of a low cliff, and returned there repeatedly (after being trapped the second time, it was back feeding within 10 minutes, having been released 100 yards away). Thus it was easily sieve-trapped. It quarrelled freely with Rock-Pipits feeding around it, as they did among themselves, and frequently went into threatening attitudes, often retreating before Rock-Pipits, but sometimes driving one away. Once I saw it crouch and cower momentarily when a Rock-Pipit called loudly near by. It also joined in local flock movements with the Rock-Pipits and flew up with them at roosting time. Feeding habits more dainty than Rock-Pipit, picking from surface of weed rather than rooting and gobbling.

The combination of these characters—warm buff colour, wagtail-like appearance and delicate habits—gave the impression of another species rather than of another race, and it was easy to pick out the bird among Rock-Pipits with the naked eye at ten yards.

Voice.

Called much less than Rock-Pipit and hardly at all when flushed, but several notes were heard when the bird was excited and these were *quite* distinct from Rock-Pipits' notes. Generally they were less loud but sharper and more incisive. When threatening a thin sharp "yit-yit-yit" or "zi-zee" or (with bill fully open) "chi-chi-chi". When Rock-Pipits were calling before roosting it joined in with a single "tsip," repeated rapidly just before taking flight: "tsup-tsup-tsup-tsup-tsup-tsup" and "si-si-si-see." When released from the hand it flew off with a shrill "cheet-cheet-cheet-cheet-cheet," reminiscent of a Wood-Sandpiper (*Tringa glareola*), but not very loud. A note of this type was once heard, uttered singly, when the bird was disturbed. It is interesting to observe that W. E. Clarke (*Studies in Bird Migration*, ii, 212) describes the only other British example as having an unfamiliar note.

Previous Wind Conditions.

Air Ministry weather charts show that, from October 1st to 3rd, westerly winds in the north-west Atlantic were such that a bird flying south from Greenland could have been drifted east to Iceland, and indeed, on October 3rd, wind conditions appear to have been particularly favourable for a sustained south-easterly drift from

Greenland to the British Isles. Again, on October 7th, strong cyclonic winds centred south-west of Iceland might well have been expected to bear a bird south from Greenland and then east to the British Isles. Of course, these suggestions are merely speculative.

P. W. P. BROWNE.

[Major R. F. Ruttledge states that from October 13th to 16th, on which date it was last seen, he and Mr. John Weaving had good opportunities of observing the bird and were able to confirm Mr. Browne's observations. R.F.R. states that on viewing a large number of skins of various races the one he selected as resembling this bird proved to be *rubescens*. It is of interest to note that the current number of *Rivista Italiana di Ornitologia* (xxii, pp. 59-61) records the first American Water-Pipit for Italy, a male having been obtained at Thiene, Vicenza, on November 13th, 1951.—EDS.]

Wood-Warblers in Sutherland.—With reference to the occurrence of Wood-Warblers (*Phylloscopus sibilatrix*) north of Loch Broom (*vide, antea*, vol xliv, p. 98 and *Bird Notes*, vol. 23, pp. 253-260), Mr. W. B. Yapp reports that in the first week of June, 1951, he found Wood-Warblers in birchwoods at Doire Dubh in Ross-shire, near Drumrunie Lodge and at Bad Lonanach, Laxford Bridge, Sutherland. The last locality is three miles north of Loch Stack where the species was recorded in 1950 (*antea, loc cit.*). Mr. G. K. Yeates informs us that in May, 1946, he heard one singing in conifers round Loch Loyal Lodge, Sutherland.

Notes on Blyth's Reed-Warbler in India.—While in India during the recent war I came across Blyth's Reed Warbler (*Acrocephalus dumetorum*) on several occasions, during the months of September and October near Delhi, Punjab, and in March and April in Bengal. I was in Delhi for only five months, but although I spent some two and a half years in Bengal I saw this species only in the spring of one year. At Delhi I found them among bush and bramble growth with small trees about the golf course. In Bengal they were among mixed tree and bush jungle, where they worked through the leafy heads of some large Mango trees (*Mangifera indica*), as well as the tangled undergrowth beneath them.

The birds I saw usually appeared to be solitary ones. They would move about in rather a leisurely way inside the dense bramble and thorn-type bushes, coming out quite often onto exposed sprays where one could get good views of them; sometimes they would work through the canopies of the trees, which were mostly not very large. Very often they did not appear to resent being watched, though any abrupt movement would send them diving into cover again, with a loud "djö - djö - djö" (ö as in German). While foraging a soft "tt - tt - tt" was given, but this was sometimes given loudly as well, and I also heard a rather sparrow-like "chrrr".

On several occasions I heard the song given, sometimes for minutes on end. This varied in loudness; often it was given so quietly as to be barely audible three yards away, while at other times

it rose into a *crescendo* that lasted several seconds. The fact that there was usually no apparent division between the whisper and the loud song is some evidence of direct connection between sub-song and "ordinary" song; and I could detect no difference in tone, pitch or general timbre. The notes comprising the song were very varied, sweet, pure notes being included in about equal proportion with comparatively discordant notes. Some of the phrases were warbled in the literal sense of the word, but the majority were given separately in a similar way to the song of a Sedge-Warbler (*Acrocephalus schænobæus*) or a Reed-Warbler (*A. scirpaceus*), though the phrases were as a rule strung together so rapidly as to give a general warbling effect. The following, compiled from notes I managed to make at intervals during the performance of one of the birds, gives a fairly good idea of the general nature of the song, but these notes do not represent any complete phrase and were not all given consecutively, as the song was given too rapidly to make a full record possible:

CHUPCHUP-T—HEEE—HEEE—SEEE——WK'WK—SE-SE-SA-SEU—
 low high high falling high falling
 WK'WK—TSITSIWEEEA—TCK-TCK—WRIPWRIP—PICPICPICPIC——
 low high low high high
 SEEEA—BRK'BRK'BRK—SEEA
 high low high low

In the field the upper parts appeared slightly olivaceous brown, with a lighter eye-stripe, in the birds seen in the autumn, but a slightly warmer brown in the birds seen in Bengal in the spring. Under-parts pale greyish-brown. M. D. LISTER.

Rufous Warbler on Kent/Sussex Border.—On September 12th, 1951, following a heavy thunderstorm in the morning and southerly winds in the afternoon, B.S.M., whilst walking along the sea wall above the Wicks on the Kent/Sussex border, was surprised to observe a sandy-brown bird about the size of a Meadow-Pipit (*Anthus pratensis*), with a long chestnut tail, which he was unable to identify. When he had been joined by K.H.P. and E.J.P., the bird was pursued along the sea wall, when very clear and close views were obtained as it appeared to be in an exhausted state.

Full plumage details were taken and upon consulting *The Handbook*, the bird was identified as a Rufous Warbler (*Agrobates galactotes*). The following observations were taken from combined field notes :—

Upper-parts pale sandy-brown; under-parts, chin and belly whitish; breast pale buff; crown pale sandy-brown; a dark line passed through the eye with a white superciliary stripe; wing-coverts dark brown flecked with paler edges giving a speckled effect; rump and tail bright chestnut. When the tail was spread a black sub-terminal band edged with white was observed, the white being more apparent at the sides of the tail; the general outline of the tail was rounded. Under-tail pure white. Legs light brown;

bill light grey.

The bird kept to the open and hopped along the shingle. At the end of a hop it drooped its wings slightly and cocked and fanned its tail holding it in a vertical position. This posture it maintained for several seconds at a time and is well shown in plate 34 of *British Birds*, vol. xl. The bird was frequently mobbed by Wheatears (*Enanthe cenanthe*) and usually made for the cover of Horned Poppy and Sea Kale growing on the sea wall.

B. S. MILNE, K. H. PALMER, E. J. PILCHER.

[Field note-books submitted to us by two of the observers contain additional confirmatory data and conclusive sketches of the bird.—EDS.]

Blackbird's nest in use six times in three successive seasons.—

Following earlier records of the use of a nest by Blackbirds (*Turdus merula*) for three or more broods (*antea* vol xxxix, p. 43; vol. xl, pp. 85, 158; vol. xliii, pp. 120, 403), I wish to record that a nest of this species was built on a ledge inside a summerhouse in my garden at Horton-cum-Studley, near Oxford, in 1949, and three broods were successfully reared in that year. On May 1st, 1950, I noticed that a hen Blackbird was incubating four eggs in the same nest, and four nestlings were successfully fledged in due course. The birds nested elsewhere for their later brood that season. On April 6th, 1951, the nest contained one egg; two more were laid, but the nest was then deserted. On April 21st, 1951, I removed the three cold eggs. On 28th May, 1951, I noticed a hen Blackbird on the same nest, and five nestlings were fledged on June 24th, 1951. The nest has thus been used for three successive seasons, and of six broods attempted five have been successful. It was not apparent that any repairs had been done to the nest since it was built.

I have records of the use of nests for two broods by birds of two other species, and it is significant that in these two cases, as in the foregoing, the nests had been built inside a shed, or under a roof, where full protection from the weather was afforded.

RAYMOND F. BAWTREE.

Alpine Swifts in Surrey and Roxburghshire.—At. 15.00 on April 25th, 1951, I saw an Alpine Swift (*Apus melba*) at Ash Vale. Its loud and long twittering, not un-musical, call first attracted my attention as it wheeled and circled low over some army huts near by, closely followed by the local pair of Swallows (*Hirundo rustica*). In flight it looked twice the size of the latter. The white belly and chin, brown upper-parts and breast band were all seen, as the bird flew low all the time I had it under observation. After about ten minutes it continued its solitary journey E.N.E. along the Ash Vale to Waterloo railway.

The Handbook states that *melba* is silent on migration. The bird I saw used on three or four occasions the cry described above, which resembled that stated by *The Handbook* as being used in the breeding-haunts.

J. F. BURTON,

[I have heard Alpine Swifts call when apparently on migration. W.B.A.]

At 18.30 on August 3rd, 1951, I watched an Alpine Swift near Hawick, Roxburghshire, for quite 10 minutes, hawking about, often only 20 yards from me and never higher than 40 to 50 feet up. I was able to see the white belly and lower breast and forked tail, clearly with $\times 8$ prism glass.

It was in company with our Swifts (*A. alpinus*) and all three species of our *hirundinidae*, about 100 all told, and after a thunderstorm some miles south; wind south and very warm. W. S. MEDLICOTT.

Purple Heron in Norfolk.—From May 10th to 12th, 1951, an immature Purple Heron (*Ardea purpurea*) was seen repeatedly, by several observers, in the dense reed-beds near East Bank, Cley, Norfolk.

In size the bird was between Common Heron (*Ardea cinerea*) and Bittern (*Botaurus stellaris*) but was much more "rakish" than either.

In flight, at a distance, the bird looked dull vinous-brown above with blue-black flight quills, the whole toned down with a delicate greyish "bloom". The crown looked darker and the hind-neck rufous. A double row of dark flecks ran down the whitish fore-neck. The legs with their extra long, spidery toes were backed with brilliant chrome-yellow and projected further beyond the tail in flight than those of the Common Heron. The wing-beats were faster than those of the latter species and the voice similar but higher-pitched, "kak!"

As mentioned in *The Handbook* the pouched effect of the folded neck of the flying bird and the consequent indentation between neck and breast were most marked. When at rest among the reeds the bird extended its incredibly long and thin neck to its extremity before lowering it and skulking away into concealment.

On May 12th a Common Heron seemed to call the Purple up from the reeds and together they flew round the marsh giving a perfect opportunity for comparison before the Purple disappeared to the West.

R. A. RICHARDSON.

Red-throated Diver taking off from the ground.—On January 13th, 1951, at the estuary of the River Stour in Kent, I saw a Red-throated Diver (*Colymbus stellatus*) sitting about 10 yards from the water's edge, and level with it.

At my approach, instead of the usual flutter to the water, I was surprised to see the bird take off from the sand with little difficulty. It accomplished this by raising itself and with rapidly beating wings and flailing feet, pattered over the sand, becoming airborne within the space of about six yards. It flew strongly out to sea, and making a circular flight, returned to the exact spot that it had just vacated.

In landing, the legs were trailing and held stiffly out from its tail, the breast hitting the ground in similar manner to the landing on water.

I then approached it again, and it repeated the manœuvre exactly as before.

On being put up for a third time it flew around, returning to a place some 80 yards further up the river, immediately taking up the crouched position usually associated with nesting.

It later took off for the fourth and last time from the ground and flew out to sea.

DENNIS F. HARLE.

Probable Buff-breasted Sandpiper in Lancashire.—On August 19th, 1950, I visited the sewage farm which is situated on one bank of the tidal portion of the Ribble, on the Preston side of Freckleton. Here I found a conspicuous yellowish bird feeding with Dunlin (*Calidris alpina*) and Ringed Plover (*Charadrius hiaticula*). I estimated its size to be about that of a Reeve (*Philomachus pugnax*). My binocular was $\times 10$ but, at 25 yards, I could see, without this, that the bird was a stranger to me. It had dark brown upper parts, criss-crossed with buff; thin pointed black bill; round head; dark brown crown; almost pure yellow cheeks, throat, neck and upper breast, with no white whatever here and no eye-stripe. The only white which I observed was on the under-wing and rear under-parts. I had some difficulty with the colour of the legs which were dull, rather than bright, and I wrote them down as "greenish-brown." It fed on the mud during the half-hour that I had it in view and it avoided the narrow strips of water by using its wings to leap over them. In spite of the fact that *The Handbook's* illustration shows bright yellow legs and no white on the rear under-parts, the rest of the observations indicate that the bird was a Buff-breasted Sandpiper (*Tryngites subruficollis*).

N. HARWOOD.

[It may be pointed out that though the legs are shown as light yellow in *The Handbook* plate, they are described as "dull orange" in the text, and considerable variation has been shown to occur in the leg-colour of other waders such as American Pectoral Sandpiper. Furthermore Forbush (*Birds of Massachusetts*) describes the under-parts as "passing into buffy-white on abdomen, flanks and under tail-coverts," and the accompanying illustration by Fuertes shows a wholly white vent. Mr. Harwood has stated *in litt.* that he noted this area as "whitish" in the field. We feel, nevertheless, that in the case of a bird so rare in Britain, and now scarce even in its normal range, confirmatory evidence of another observer is required. Unfortunately, the bird did not remain long enough to enable Mr. Harwood to obtain such confirmation.—EDS.]

Yellowshank in Cheshire.—A Yellowshank (*Tringa flavipes*) was present at Altrincham Sewage Farm, Cheshire, on September 8th and 9th, 1951, and was watched by many observers. It was easily approached when first seen and flew only short distances, without making any call. Although conditions were quite suitable for the various other waders on the tank, the Yellowshank never attempted to feed at any time whilst under observation. On the second day it became increasingly lethargic and eventually died

shortly after allowing itself to be picked up by Mr. C. A. Milner.

The bird was given to the Manchester Museum for preservation and was found to be a juvenile female. The species has not previously been recorded in Cheshire. E. L. ARNOLD.

[We take this opportunity to refer briefly and belatedly to three records of Yellowshanks seen in 1950, in which year American waders were more numerous than usual in Britain. One was seen at Abberton reservoir, Essex, on July 15th (W. B. Alexander and Dr. E. A. R. Ennion); one at Minsmere, Suffolk, August 26th-28th (W. Robinson, I. Houston, J. G. Marshall, Brigadier H. M. Stanford and William Stanford); and one on the northern shore of Loch Crinan, Argyllshire, on November 3rd (A. J. Bruce).—EDS.]

Bonaparte's Gull in Sussex.—On June 24th, 1951, I saw a Bonaparte's Gull (*Larus philadelphia*) in first summer plumage feeding at the sewage outlet at Langney Point, Sussex. I had the bird under observation for more than ten minutes, often at close range, and noted the following particulars: distinctly smaller and slighter than a Black-headed Gull (*L. ridibundus*); flight more graceful than that of the latter species and very similar in the motions of wings and body to that of the Common Terns (*Sterna hirundo*) which were feeding with it; descended to pick food off the surface in a more tern-like manner than the Black-headed Gulls which were present and also feeding in this way. The bird could be picked out from among Black-headed Gulls by these features alone. The head at first glance appeared grey but closer examination showed that this grey was not uniform but was mixed with some whitish. The bill was blackish. The legs could only be seen when the bird dropped them on approaching the surface to feed. They appeared to be dull brownish. The general coloration of the upper-parts was similar to that of first summer Black-headed Gulls except that it was rather paler than was the case with the dozen or so of the latter species in this plumage which were also present. There were black markings towards the tips of the secondaries and the adjoining primaries. The bird did not particularly associate with Black-headed Gulls, both arriving and leaving alone.

This appears to be the first summer record of this species for Britain, all the previous nine known occurrences having been between November and April. D. D. HARBER.

Comparative aggressiveness of the first-year and adult Black-headed Gull.—I have frequently noted that the first-year Black-headed Gull (*Larus ridibundus*) seemed a much more aggressive bird than the adult, except when the latter was at a breeding colony. As this aspect of the species seems not to have been studied extensively, I began from 1948 onwards to note all the more aggressive and excitable phases of its behaviour, together with the plumage of the birds involved. Though the data are not extensive, they consistently bear out the point in a surprising fashion. They were collected entirely from the Norfolk Broads in 1948, 1949 and 1950. In

winter the Broads' population of Black-heads is 80-90% adult. In the spring the birds I saw outside the breeding colonies (data from which are not included) were 60% adult. The results are tabulated below. In all cases of mobbing, snatching food from birds on the water, excitable aerobatics and quarrels with other Black-heads over three-quarters of the birds involved were in their first winter or first summer.

	Nos. of instances	Adults	First-years	% of first-years involved
A. Attempts to snatch food from birds on the water	18	3	15	83
B. Mobbing of other birds, usually not for food ...	20	4	16	80
C. Pursuits of other Black-headed Gulls (usually for food)	45	10	35	78
D. Aerobatics and excitable flight	65	8	57	88
A. includes Tufted Duck (4), Great Crested Grebe (5), Little Grebe (2), Moorhen (1), Coot (6).				
B. includes Kestrel (1), Marsh-Harrier (4), Heron (7), Bittern (1), Wigeon (1), Black Tern (1), Common Tern (2), Common Gull (3).				

It seems worthy of mention that my records show that the juvenile birds reach a peak of aggressiveness in the spring corresponding to the breeding season in adults. But the juvenile bird is also more active and aggressive throughout the year, tending to indulge in apparently purposeless mobbing as the two following records show.

The first was recorded on January 5th, 1950, at Hickling Broad. An immature bird was seen to fly up to a line of some 60 Wigeon (*Anas penelope*) some 50 yards long, and by calling loudly and hovering low over them, continually returning to obstinate birds, it caused every duck to move from that area to another part of the Broads.

The second was recorded on September 4th, 1948, when a Moorhen (*Gallinula chloropus*) which moved into a group of six adults was left alone until a first-winter bird arrived. Then the immature bird began to annoy and dive down upon the Moorhen, causing it to dive twice, while the adults took only a minor part in the action. In both these cases there was no question of obtaining food.

It would be interesting to discover if this aggressiveness is a character of other immature birds especially of those species which do not nest in their first year.

R. G. PETTITT.

REVIEWS.

The Sea Around Us. By Rachel L. Carson (Staples, 1951). 12s. 6d.

It is a remarkable indication of the growth of interest in the oceans that this scientific account of them should have run through three impressions within the month of publication. It is excellently written and brings together clearly a great deal which would otherwise be difficult to trace and understand. The passages on bird life, although correct, are perhaps the most disappointing in that

they are comparatively meagre and are so largely concerned with land-based observations, to the neglect of a good deal which has been worked out recently about the distribution and habits of birds far out at sea. As this work seems destined to go through other editions it may be suggested that some revision in this respect would be worth while. It is however in the background which it provides for marine ornithology that the book is so useful and interesting. For example, an account is given of the relationship of changing ocean currents to climate, which goes far to explain the remarkable recent changes in the bird life of Greenland, Iceland and some other northern countries. The British Isles, having already enjoyed the full force of the Gulf Stream, have experienced much less marked changes. The suggestion that the increased melting of the ice may account for a rise in ocean levels which amounted on the east coast of the United States to as much as four inches between 1930 and 1948 has disturbing implications for the future of low-lying coastal areas. But *The Sea Around Us* is full of interesting things, and it is fortunate that the publishers have been able to produce it at a price which by current standards is very reasonable considering the length and the standard of production. E.M.N.

Wandering Albatross: Adventures among the Albatrosses and Petrels in the Southern Ocean. By L. Harrison Matthews (London: Macgibbon & Kee, with Reinhardt & Evans, 1951). 15s.

This is an account of observations on the birds of South Georgia made over 20 years ago, though the exact dates do not appear. Most of the species referred to are illustrated in excellent photographs, and the heads of a number of them in black and white sketches, by the author. These, with the descriptions in the text, many of which give a very good idea of the characteristic appearance or behaviour of the species, should help the reader unfamiliar with them to form true mental pictures of many of the commoner birds of the southern oceans. The reviewer must confess, however, that the description of the song of the Antarctic Pipit leaves him puzzled. The bird is said to resemble the Rock-Pipit and to rise in short hovering flights singing a short but quite musical trill which reminded the author, not of that of the Rock- or Meadow-Pipit as might have been supposed, but of the Corn-Bunting!

The author's opportunities for studying the breeding behaviour of most of the South Georgia sea-birds were evidently very limited and were largely gained by accompanying parties of sealers or whalers to the more remote parts of the island on raids to gather their eggs for food. On one of these raids 2,000 eggs of the Wandering Albatross were collected and this species, according to the author, does not nest every year and only lays a single egg. The accounts of these expeditions are enlarged by including the remarks and conversations of those who took part, quoted verbatim after over 20 years; as might be expected the English spoken by these foreign seamen is full of expressions not heard in drawing-rooms and in the reviewer's opinion its introduction is disagreeable and quite unnecessary.

But apparently the book is not intended to please ornithologists, as it is dedicated "To Bird Lovers, especially those who love them piping hot, well browned and with plenty of bread sauce." W.B.A.

The History of American Ornithology before Audubon. By Elsa G. Allen. (Trans. Amer. Phil. Soc., New Series, vol. 41, part 3, 1951. \$2.00.)

This work is primarily an account of what is known of the lives of those travellers and naturalists through whose writings the avifauna of North America gradually became known to the world. In order to place them in proper perspective Mrs. Allen has dealt also with the history of the development of ornithology as a science and given accounts of the lives of most of the leading European ornithologists from Aristotle to Willughby and Ray, Linnaeus and Buffon. The greatest amount of space is naturally devoted to those who studied American birds in their native country, especially Mark Catesby, William Bartram, John Abbot, Vieillot and Alexander Wilson. The numerous illustrations are mainly reproductions of portraits or early pictures of American birds. W.B.A.

LETTERS.

THE BIRDS OF WILTSHIRE

To the Editors of BRITISH BIRDS

SIRS.—A sub-committee of the Natural History Section of the Wilts Archæological and Natural History Society has been formed to prepare a Check-List of Wiltshire Birds.

It would be grateful for any information your readers may have about collections of stuffed birds which may include specimens labelled as Wiltshire birds, and of game books containing records of shoots in the county.

184, Sheldon Road, Chippenham, Wilts.

CYRIL RICE, *Chairman*.

THE ALEXANDER AND B.T.O. LIBRARIES

To the Editors of BRITISH BIRDS

SIRS.—The Edward Grey Institute of Field Ornithology at Oxford houses two libraries, the reference library of the Institute (now known as the Alexander Library) and the lending library of the British Trust for Ornithology.

The Alexander library has become one of the most complete ornithological libraries in Britain. The use of it is, of course, by no means confined to the Institute staff. All members of the British Trust for Ornithology, of Oxford University and of the Oxford Ornithological Society have an equal right to use it as a reference library, while an increasing number of ornithologists from abroad visit Oxford specially in order to study there. Further, it has now been agreed that members of the British Ornithologists' Union will be given similar privileges to members of the B.T.O. for working in the library. The Alexander Library has, in fact, become a national library for ornithological research.

The library has grown up largely by donations from private individuals, including Mr. W. B. Alexander himself, while several distinguished ornithologists have bequeathed their libraries or particular books. As a result the library is nearly complete so far as works on British birds are concerned, except for the expensive colour-plate books and other collectors' pieces. For other parts of the world the cover is not as yet so good, except as regards ornithological journals, for which, thanks to generous donations from ornithological societies and institutions in all parts of the world, we have complete series for all recent years.

The object of this letter is to ask ornithologists who are disposing of their libraries or of particular books to bear in mind the needs of the Alexander Library. We would be particularly grateful for gifts and bequests, but if this is impossible, for first offers before the books are sold to a dealer, so that the Institute may have the chance of buying at dealers' prices. We are particularly anxious to fill serious gaps in our collection of bird-books relating to Africa, which are the more serious now that we have so many visitors from that continent to work in the library during their leave. Other notable gaps include Groebbel's *Der Vogel*, Phillips' *A Natural History of the Ducks* and Casey Wood's translation of Frederick II's treatise on hawking.

The Edward Grey Institute also houses the lending library of the British Trust for Ornithology, which consists of duplicates from the main library. By agreement between the Institute and the Trust, any book presented to the Institute which is already in the Alexander Library is transferred to the Trust Library, and conversely any book given to the Trust which is not in the Alexander Library is transferred to the latter. The lending library has grown up almost wholly from the gifts or bequests of members of the British Trust for Ornithology and is increasingly used by members of the Trust. It is as valuable a help to amateur research as the reference library, from which books cannot be lent.

We would therefore ask all ornithologists to bear in mind the needs of these two important libraries.

A. C. HARDY (*Head of Department of Zoological Field Studies, Oxford*).

H. P. W. HUTSON (*Chairman of the British Trust for Ornithology*).

A. LANDSBOROUGH THOMSON (*President of the British Ornithologists' Union*).



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THE BREEDING OF THE GULL-BILLED TERN IN ESSEX.

BY

G. A. PYMAN AND C. B. WAINWRIGHT.

The attractiveness to birds of the comparatively recently formed Abberton Reservoir, three miles south of Colchester in Essex, has already been described by Dr. J. W. Campbell (*antea*, vol. xl, pp. 78-82). This reservoir lies some $1\frac{1}{2}$ miles north of the out-lying marshes of the Blackwater Estuary and, at the same time, only about three miles south-west of the Colne Valley. It is divided by two causeways into Upper, Middle and Lower areas, totalling some 1,210 acres, and when the water level drops sufficiently an island of about 11 acres appears mid-way along, and near the northern bank of, the Lower (and by far the largest) reservoir, a magnificent sheet of water, 1,030 acres in area when the reservoir is full, and with a perimeter of over nine miles.

Following an absence of several years, this island re-appeared during the summer of 1948. It was of a gravelly nature and gradually became largely covered with a variety of ground vegetation and a very few willow shrubs, but even up to early 1951, when it was again submerged, a good deal of its surface was covered with grass, quite thick in places, and there were even some bare gravelly patches. Such was the island that gradually became colonised by a remarkable population of birds.

A number of pairs of Tufted Duck (*Aythya fuligula*), Shoveler (*Spatula clypeata*), Mallard (*Anas platyrhynchos*) and Redshank (*Tringa totanus*) bred in the denser vegetation and Ringed Plover (*Charadrins hiaticula*) on the gravelly patches, whilst an extraordinary, loose colony of Great Crested Grebes (*Podiceps cristatus*) nested in the shallows round the island. In 1950, when, following the prolonged drought, the area of the island eventually extended to some 30 acres, the water fell so rapidly that the Grebes' nests were stranded on the mud, in many cases at considerable distances, up to 30 yards, from the water's edge, and these stuck up as cones of mud, each with a hollow on the top.

The extent to which the island was populated by birds during its previous appearances—when in any case it was comparatively limited in area—is not known, but in 1948 it was the nesting site of an indeterminate number of Common Terns (*Sterna hirundo*) from mid-summer onwards, whilst in 1949 it was colonised by

at least 250 pairs of Black-headed Gulls (*Larus ridibundus*), about 60 pairs of Common Terns and some 11 pairs of Little Terns (*Sterna albifrons*). This appears to form the only instance of the last species breeding inland in England, and is the more interesting as they nested in short grass or eaked mud, and not on the gravelly patches. In 1950, the number of pairs of Black-headed Gulls had risen to about 1,000, whilst the population of Common and Little Terns remained at about the 1949 figures.

On July 24th, 1949, R. V. A. Marshall and G. A. P., when on the margin of the reservoir, were mobbed by a pair of large terns which appeared from amongst Common Terns over the area of the island. From their behaviour the birds were assumed to be nesting on the island, and, from the restricted and overhead views obtained, they were thought to be Sandwich Terns (*Sterna sandvicensis*), a species with which the observers were unfamiliar.

On July 2nd, 1950, G. A. P. again encountered a pair of terns, in the same place, which were immediately recognised as belonging to the same species as that seen in 1949, by their striking calls and fairly stout (but not very long) and wholly black bills. About a week later, in Norfolk, G. A. P. took the opportunity of studying Sandwich Terns at their breeding station and comparing them with the Abberton terns; having particularly noted their longer, invariably yellow-tipped bills and distinct call-notes, and also their more deeply forked tails and rather more slender form, he realised, as he had already suspected, that the Abberton birds were in fact Gull-billed Terns (*Gelochelidon nilotica*). In the meantime, R. V. A. M. had watched at close range one of the birds flying low along the edge of the reservoir, when he noted the dark primaries in addition to the distinguishing features listed by G. A. P., and had arrived at the same conclusion.

On July 4th, 1950, C. B. W. found and ringed a nestling tern with a dark bill, while a tern with a black bill flew, screaming, about 50 feet over his head. He found this nestling healthy on the 5th and 6th and on each occasion one parent flew around protesting. On July 10th one adult again flew round him, some 200 yards from where the nestling had been ringed, but he did not see the chick.

On July 13th, a friend who accompanied C. B. W. to the island picked up this nestling dead another 50 yards further on. The nestling's bill had by this time developed, and it was fairly obviously a Gull-billed Tern. The bird was preserved and it was examined the next evening by Dr. E. A. R. Ennion and W. B. Alexander. The identification was later confirmed by R. Wagstaffe of the Liverpool Museum, where the bird is now preserved. No adult was seen after July 10th, in spite of searches by C. B. W. and others.

[Publication of this most interesting record of the first breeding in Britain of the Gull-billed Tern has been withheld until now in the hope that the birds would again return. However, the rainfall in the winter and early spring of 1951 and the duplication of the supply pipe-line unfortunately raised the water-level above the island during the breeding seasons of 1951 and 1952, so that no birds were able to nest on it, though in 1951 some 40 pairs of Common Terns attempted to breed on the concrete road-way around the Reservoir. No further reports of Gull-billed Terns have been received from Essex, and it seems likely that the island will remain submerged in the future, except for occasional short periods in early autumn.—EDS.]

ON THE GULL-BILLED TERNS AT "DE BEER" NEAR HOOK-OF-HOLLAND IN 1949.

BY

SIMON DE WAARD.

ON May 29th, 1949, A. M. van den Oord and the author found a nest with two eggs of the Gull-billed Tern (*Gelochelidon nilotica*) on the beach of "De Beer" near Hook-of-Holland. On June 19th another nest was found with two nestlings, and a third nest containing two eggs, one of which afterwards disappeared, was found on the 29th. The first and third nests were about 600 yards apart on a beach among low dunes with Common Terns (*Sterna hirundo*) breeding in the vicinity. The second nest was farther away from the sea, in the middle of a small sandy plain between low dunes, with Black-headed Gulls (*Larus ridibundus*) and Common Terns breeding near-by. In all cases the scrapes were rather big and deep and practically without lining.

The eggs of the first nest showed a marked difference in form and colour. One was greenish, the other yellow-brown and the dimensions were 49.1 × 36.2 mm. and 50.7 × 34.4 mm. respectively (F. P. J. Kooymans). On June 16th the yellow-brown egg showed cracks and on the 19th we found a young bird, already dry, and the shell still in the nest. The second egg hatched on June 20th. The birds did not remove the shells: the first was thrown out by a movement of the brooding bird and then blown away by the wind, and the second we took home in the evening.

The nestling that hatched on June 19th (out of the darker egg) was dark, the upper-parts being almost evenly brownish-black. The bill was rather heavy and of a pink colour, with a black tip and a white egg-tooth. The legs were orange-yellow. The upper-

parts of the second nestling were mouse-grey. The difference in colour between the nestlings is well shown in the upper picture on plate 80.

We saw the brooding bird fed with a small fish by its mate. Three pellets were found; one—about as big as a hazel-nut—consisting of very small pieces of fish-bone and the other two of hairs and bones of mice. Kooymans saw one of the old birds hunting over the Green Beach where it picked up a nestling bird five times to drop it from a height of some metres. He ran towards it and chased off the Gull-billed Tern. The nestling was found to be a few-days-old Avocet (*Recurvirostra avosetta*), which was dead.

We were also able to obtain some data about the food of the young. On June 19th the first, just hatched, stayed under the old bird till about noon, when it began to cheep and creep away, upon which the other adult, then standing near the nest, flew away and came back with a small insect which it gave to the chick (plate 79). The brooding bird had left the nest for a short time, but returned immediately after the young had been fed and went on brooding. Twice again we saw that the chick was given an insect, after which it kept still, under the old bird. On June 21st the larger nestling was fed with a small fish, which the adult brought in its bill. Afterwards the old birds were seen a few times disgorging very small pieces of food which were given to the young.

Particularly after the eggs hatched, the Gull-billed Terns were violently attacked by the Common Terns which were breeding near-by. They reacted by lifting their heads in a defensive manner, uttering an angry "arrrr", opening their bills wide so that the reddish insides showed. They were also often attacked by Common and Little Terns (*Sterna albifrons*) when flying over the beach. Usually they dodged the attacks without defensive movements or sounds, but when a Black-headed Gull came near the nesting-site, they became excited and uttered a loud "eha-hu, eha-hu", and also "huhuhuhu" (u as in duck), the same note as the alarm (to get the right idea of these sounds they should be pronounced very nasally). When taking over at brooding, the incoming bird uttered the loud "eha-hu, cha-hu", sometimes with its bill almost closed, sometimes with an open bill, in which case it was a very harsh and loud sound. The sitting bird made muttering noises, stretched flat on the nest and then in most cases flew off suddenly, at the moment when the other bird was very near.

Although all the eggs hatched in each nest, the young disappeared soon afterwards in every case, so that it seems very probable that they did not live. The Herring-Gulls (*Larus argentatus*), which breed at "De Beer" in some hundreds of pairs, are thought to be responsible for this.

[It is only since the recent war (*cf.* p 357) that the Gull-billed Tern has nested regularly—in very small numbers—in Holland, so that, although the gist of this paper has already been published in *Ardea*, vol. 37, pp. 161-167 (in Dutch), we are glad to print this account of one of the 1949 nests at "De Beer", partly as an accompaniment to the photographs plates 78-80) and partly to supplement the Essex record with a few breeding details.—EDS.]

REPORT ON BIRD-RINGING FOR 1951.

BY

A. LANDSBOROUGH THOMSON, C.B., D.Sc., *Chairman*,
AND E. P. LEACH, *Hon. Secretary*,

Bird-Ringing Committee, British Trust for Ornithology.

(Continued from page 277).

Mallard (*Anas platyrhynchos*).

The following recoveries relate to birds ringed as full-grown in autumn or winter, mainly at decoys for the Wildfowl Inquiry Committee :—

9 recovered elsewhere in Great Britain in subsequent seasons ;
12 recovered in Holland in subsequent seasons ; and those listed below.

RINGED AS FULL-GROWN.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
406203	Mochrum (Wigtown), 4.3.51, by Lord D. Stuart.	Forsa, East Sweden, 1.9.51, [61° 44' N., 16° 57' E.].
AN.7004	Sunninghill (Berks), 14.2.50, by Ash and Ridley.	Ringkøbing Fjord, Denmark, 12.10.51.
926212	Colchester (Essex), 22.12.50.	Pudasjärvi, Finland, autumn 1951, [65° 20' N., 26° 55' E.].
928385	Slimbridge (Glos.), 13.9.50.	Hauho, Finland, 26.4.51, [61° 15' N., 24° 30' E.].
926539	Ditto 11.2.49.	Vähäkyrö, Finland, 25.4.51, [ca. 63° N., 22° E.].
927443	Colchester, 28.2.51.	Segeberg, Schleswig-Holstein, 28.7.51.
929227	Ditto 11.11.50	Tönning, Schleswig-Holstein, 2.10.51.
928535	Slimbridge, 17.9.50.	Husum, Schleswig-Holstein, 5.12.51.
926996	Colchester, 30.1.50.	Bremerhaven, Germany, 2.10.51.

RINGED AS FULL-GROWN.

No.	Ringed.	Recovered.
928415	Slimbridge, 13.9.50.	Fredrikstad, Norway, 19.10.51.
927700	Ditto 28.9.49.	Fällfors, (Västerbotten), Sweden, 22.9.51.
928735	Ditto 4.10.50.	Örsundsbro (Uppland), Sweden, 23.8.51.
925983	Ditto 27.12.47.	Söderfors (Uppland), Sweden, spring, 1950.
927469	Colchester, 31.3.51.	Ljusterö, Stockholm, Sweden, 18.8.51.
927465	Ditto 10.3.51.	Charlottenburg, South Sweden, -.10.51.
928252	Slimbridge, 11.9.50	Island of Samsö, Den- mark, 28.10.51.
928657	Ditto 24.9.50.	Tournehem (Pas-de- Calais), France, -.2.52.
928273	Ditto 11.9.50.	Ardres (Pas-de-Calais), France, 20.1.52.
928630	Ditto 23.9.50.	St. Valéry (Somme), France, 12.9.51.
928230	Ditto 11.9.50.	Lac de Grand Lieu (Loire Inf.), France, 2.9.51.
928815	Ditto 14.12.50.	La Ferté-Bernard (Sarthe), France, 7.12.51.

Teal (*Anas crecca*).

There are again many records of birds ringed in autumn or winter, at decoys in England and Wales, for the Wildfowl Inquiry Committee. Of these birds, there were recoveries later in the same winter or in the following spring from Ireland (8), N. France (5), Belgium (1), and Holland (4); and in subsequent seasons from Scotland (3), Ireland (24), N. France (15), Belgium (2), Holland (21), N. Germany (21), and Denmark (26). One bird ringed in Essex on January 25th was recovered in Seine Inférieure two days later.

There are also 20 recoveries from Finland, mostly in the breeding season. The records from other countries, including the remainder of France, are listed below. The Guadalquivir locality is the farthest south of those from which Teal ringed in the British Isles have so far been recorded.

910043	Colchester (Essex), 13.12.50.	Junosuando, N. Sweden, 20.7.51. [67° 20' N., 22° 30' E.].
910150	Ditto 22.12.50.	Gellivare, N. Sweden, 6.9.51, [67° 15' N., 20° 30' E.].
908315	Peterborough (Northants.), 22.2.50.	Gråträsk, N. Sweden, 17.5.51, [65° 30' N., 20° E.].

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
905525	Pembroke, 9.12.50.	Sorsele, N. Sweden, 3.9.51, [65° 30' N., 17° 30' E.
907711	Colchester, 24.1.50.	Piteå, N. Sweden, 25.8.51, [65° 20' N., 21° 30' E.].
910572	Ditto 6.2.51.	Umeå, N. Sweden, 21.8.51, [63° 45' N., 20° 20' E.].
910718	Ditto 28.2.51.	Tåkern Lake (Östergöt- land), Sweden, 19.8.51.
911475	Peterborough, 26.2.51.	Hornborga Lake (Väster- götland), Sweden, 11.8.51.
910732	Colchester, 2.3.51.	Ditto, 7.10.51.
905714	Pembroke, 14.1.51.	Vättern Lake (Östergöt- land), Sweden, 24.8.51.
909212	Colchester, 24.10.50.	Near Växjö, S. Sweden, -.11.51.
910066	Ditto 13.12.50.	Ditto, 2.6.51.
909487	Ditto 12.11.50.	Osby, S. Sweden, 1.8.51, [56° 22' N., 14° E.].
909874	Ditto 4.12.50.	Kristianopel, S. Sweden, -.4.51, [56° 15' N., 16° 3' E.].
909379	Ditto 2.11.50.	Revingeby, S. Sweden, 26.8.51, [55° 43' N., 13° 22' E.].
906738	Slimbridge (Glos.), 3.4.50.	Stenhag, S. Sweden, 22.9.51, [55° 54' N., 13° 26' E.].
909527	Ditto, 17.9.50.	Lund, S. Sweden, spring, 1951, [55° 43' N., 13° 12' E.].
911843	Ditto, 1.10.51.	Carnac-Plage (Morbihan), France, 6.10.51.
912579	Peterborough, 16.1.52.	Champtoceaux (Maine-et- Loire), France, 27.1.52.
911692	Ditto, 2.9.51.	Near Chateaubriant (Loire Inf.), France, 17.9.51.
909188	Colchester, 23.10.50.	Maillezais (Vendée), France, 9.3.51.
910404	Ditto, 21.1.51.	Near Tonnay - Charente (Charente Inf.), France, 3.2.52.
910696	Ditto, 27.2.51.	Soulac (Gironde), France, 10.12.51.
912060	Peterborough, 23.11.51.	Belin (Gironde), France, 15.1.52.

No.	Ringed.	Recovered.
907793	Colchester, 14.2.50.	Near Bidache (Basses-Pyrénées), France, 24.2.52.
909779	Ditto, 24.11.50.	Perrigny (Côte d'Or), France, 25.3.51.
909896	Ditto, 4.12.50.	St. Louis (Bouches-du-Rhone), France, 30.12.51.
907774	Ditto, 9.2.50.	Besate, N. Italy, 21.12.51. [45° 18' N., 8° 57' E.].
907568	Ditto, 20.10.49.	Mantua, N. Italy, 3.1.51.
908826	Peterborough, 21.8.50.	Lubiano (Alava), Spain, 23.3.51.
910870	Colchester, 21.10.51.	Villavieja (Salamanca), Spain, 2.3.52.
905377	Pembroke, 31.12.49.	Mouth of R. Guadalquivir, Spain, 11.2.52.

Garganey (*Anas querquedula*).

910795	Colchester (Essex), 21.4.51, ad., for Wildfowl Inq. Ctee.	Near Peschiera (Mantua), Italy, 15.3.52.
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Wigeon (*Anas penelope*).

RINGED AS FULL-GROWN.

344484	Gibraltar Point Bird Obs., 5.1.50.	Hagested (Zealand), Denmark, 10.11.51.
Or 4755	Pembroke, 12.1.50.	Pieve Albignola (Pavia), Italy, 11.12.51.

RINGS ISSUED TO WILDFOWL INQUIRY COMMITTEE.

910737	Colchester (Essex), 2.3.51.	Ribble Estuary (Lancs.), -10.51. [210 m. N.W.].
910736	Ditto, 2.3.51.	Strangford Lough (Down), 14.9.51.
907291	Peterborough (Northants.), 6.3.49.	Cockerham (Lancs.), Dec., 1950 or Jan., 1951, [140 m. N.W.].
907239	Ditto, 4.3.49.	Munnekezijl (Friesland), Holland, 25.1.52, [53° 18' N., 6° 18' E.].
907210	Ditto, 28.2.49.	Terschelling, Holland, 18.12.51.
907307	Ditto, 6.3.49.	Ditto, 28.1.52.
907328	Ditto, 6.3.49.	Lac de Grand Lieu (Loire Inf.), France, 25.1.52.
906690	Slimbridge (Glos.), 24.9.49.	Montjean (Maine - et - Loire), France, 12.2.51, [47° 23' N., 0° 52' W.].

Pintail (*Anas acuta*).

RINGED AS FULL-GROWN.

RINGS ISSUED TO WILDFOWL INQUIRY COMMITTEE.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
909583	Slimbridge (Glos.), 10.12.50.	Loch Leven (Kinross), 12.1.52.
928517	Ditto, 16.9.50.	Lokka, Finland, -8.51, [67° 50' N., 27° 43' E.].
909562	Ditto, 28.10.50.	Nisum Fjord (Jutland), Denmark, 22.8.51.
928976	Ditto, 19.2.51.	Texel, Holland, 2.10.51.
906698	Ditto, 12.10.49.	Kampen (Overijssel), Holland, -10.51.
911857	Ditto, 19.10.51.	Algemesi (Valencia), Spain, 7.12.51.

Shoveler (*Spatula clypeata*).

RINGED AS FULL-GROWN.

RINGS ISSUED TO WILDFOWL INQUIRY COMMITTEE.

403737	Slimbridge (Glos.), 11.8.49.	Montdidier (Somme), France, 23.9.51.
909517	Ditto, 25.8.50.	Le Havre (Seine Inf.), France, 28.8.51.

Tufted Duck (*Aythya fuligula*).

RINGED AS FULL-GROWN.

345299	St. James's Park, London, 21.12.50, by London N.H.S.	Langweer (Friesland),, Holland, 14.12.51.
Or 3386	Pembroke, 1.2.38.	Barnes, Surrey, -1.52.
910583	Colchester (Essex), 6.2.51, for Wildfowl Inq. Ctee.	Kelty (Fife), 26.1.52.
907768	Ditto, 1.2.50.	Saltsjöbaden, E. Sweden. 1.1.52.

Cormorant (*Phalacrocorax carbo*).

Of birds ringed as young, 10 have been recovered in winter elsewhere in the British Isles, 9 on the northern and western coasts of France, and 2 in northern Spain. One bird was over twelve years old; it was within 75 miles of its native locality.

Shag (*Phalacrocorax aristotelis*).

RINGED AS YOUNG.

129079	Farne Is. (Northumb.), 27.7.51, by Northd. & Durham N.H.S.	Ballintore (Ross.), 6.3.52, [170 m. N.W.].
129008	Ditto, 28.6.51.	Carnoustie (Angus), 29.3.52, [75 m. N.N.W.].
507490	Maughold Head, I. of Man, 15.7.51, by Cowin, Crellin, Moss, and Pool.	Port William (Wigtown), -3.52.

RINGED AS YOUNG.

No.	Ringed	Recovered.
507489	Ditto, 15.7.51.	Parkgate, Wirral (Ches.), 1.1.52.
506796	Fetlar, Shetland, 23.7.50, by P. Evans.	Måløy, Norway, 8.3.51, [61° 9' N., 5° 2' E.].

Gannet (*Sula bassana*).

One ringed as young and two as adults have been recovered in home waters in circumstances of no particular interest. Of birds ringed as young there have been recoveries from northern France (4), Holland (1), and Spain (2)—all within the first two years of life. There are also the following records :—

RINGED AS YOUNG.

505673	Bass Rock, 10.7.48, by Midlothian O.C.	South Uist, Outer Hebrides, 9.5.51.
501335	Ditto, 6.7.51, by I. V. Balfour-Paul.	Stronsay, Orkney, 26.12.51.
507802	Ditto, 15.7.51.	Arzeu, Algeria, 27.12.51.
507776	Ditto, 6.7.51.	Off Canary Is., —.10.51.
500987	Ditto, 7.8.49, by I. Appleyard.	Nordstrand, N. Frisian Is., 3.1.52.
506499	Ditto, 24.7.48, by Ash and Ridley.	Terschelling, Holland, 12.1.52.
508325	Ditto, 8.7.51, by Edinburgh Academy O.S.	Algiers, 28.11.51.

Storm-Petrel (*Hydrobates pelagicus*).

SS.476	Skokholm Bird Obs., 16.6.49, ad.	At sea, 1.7.51, [ca. 50° 40' N., 6° W.].
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Manx Shearwater (*Puffinus puffinus*).

There are 18 records showing movement, all of birds ringed on Skokholm and mostly as adults; 2 of the recoveries are from the British Isles, 13 from France (all but one in the period April—August), and 3 from Spain (all in March).

There are also the three following recoveries, one from Brazil—the first record of a British ringed bird from South America—one from an inland locality, and one from well to the north of the place of ringing.

AX.1631	Skokholm Bird Obs., 31.8.50, young.	Chesterfield (Derby), 28.9.51, [195 m. N.E.].
AX.4904	Ditto, 10.9.51.	Rio de Janeiro, Brazil, 20.11.51.
AX.2365	Ditto, 24.4.51, ad.	Fairlie (Ayr), 28.8.51.

Fulmar Petrel (*Fulmarus glacialis*).

352285	Gairsay, Orkney, 26.7.51, young, by R. Carrick.	Lowestoft (Suffolk), 9.3.52, [495 m. S.S.E.].
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Wood-Pigeon (*Columba palumbus*).

RINGED AS YOUNG.

No.	Ringed.	Recovered.
344577	Glenorchard (Stirling), 6.9.49, by J. Bartholomew.	Lockerbie (Dumfries), 25.10.51, [65 m. S.S.E.].
346698	Andreas, I. of Man, 31.8.51, by Cowin, Crellin, Moss and Pool.	Bodedern, Anglesey, 18.1.52.

Stone-Curlew (*Burhinus oedipnemus*).

347489	Shirburn (Oxon.), 3.6.50, young, by Thearle and Hobbs.	Torres Vedras, Portugal, 30.10.51.
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Oyster-catcher (*Hæmatopus ostralegus*).

RINGED AS YOUNG.

329172	Bressay, Shetland, 12.6.48, by R. A. Richardson.	Llanelly (Carms.), 27.8.51.
337622	Fair Isle Bird Obs., 21.6.51.	Cap Ferret (Gironde), France, 21.8.51.
359993	Newtonmore (Inverness), 16.7.51, by R. Perry.	Portacloy (Mayo), 25.1.52.
320988	Kinordy (Angus), 6.6.50, by D. R. Anderson.	Dumfries, 10.10.51, [112 m. S.]
347523	Midlothian, 3.6.50, by D. G. Andrew.	Wallasey (Ches.), 8.12.51.
338968	Skokholm Bird Obs., 15.6.50.	Ile d'Oléron (Charente Inf.), France, 11.2.52.

Ringed Plover (*Charadrius hiaticula*).

SV.325	Colchester (Essex), 28.7.50, full-grown, by C. B. Wainwright.	Thyborøn (Jutland), Denmark, 13.6.51.
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Golden Plover (*Pluvialis apricaria*).

245602	Kyle of Tongue (Suth.), 29.6.51, young, by I. D. Pennie.	Westray, Orkney, -.12.51.
246078	Elsdon (Northumb.), 24.5.49, young, by Ash and Ridley.	Blagdon (Northumb.), 31.1.52, [20 m. S.E.].

Lapwing (*Vanellus vanellus*).

RINGED AS YOUNG.

250608	Aultbea (Ross), 1.6.50, by P. A. Rayfield.	Corné (Maine - et - Loire), France, 13.3.51.
262780	Newtonmore (Inverness), 26.6.51, by R. Perry.	Thurles (Tipperary), 29.1.52.
Witherby AN.5434	Keith (Banff), 4.6.47, by A. Watson.	Lough Arrow (Sligo), -.2.52.
260345	Seahouses (Northumb.), 6.6.51, by E. A. R. Ennion.	Angle (Vendée), France, -.3.52.
242252	Burgh Marsh (Cumb.), 20.5.48, by R. H. Brown.	Bruff (Limerick), 21.2.52.
249654	Langwathby (Cumb.), 8.6.49, by W. Howe.	Kilcock (Kildare), 20.2.52.

RINGED AS YOUNG.

No.	Ringed.	Recovered.
243421	Padiham (Lanes.), 12.5.48, by J. J. Boon.	Colinstown (Dublin), 26.1.52.
261824	Ditto. 28.5.51	Newmarket (Cork), 26.12.51.
252067	Slaidburn (Yorks.), 10.6.51, by G. A. Bowden.	Camolin (Wexford) 6.2.52.
254765	Ditto. 10.6.51, by J. K. Fenton.	The Curragh (Kildare), 19.1.52.
242512	Ilkley (Yorks.), 26.5.51, by Wharfedale N.S.	Loughor (Glam.) 20.1.52, [190 m. S.S.W.].
252443	Staines (Middlesex), 28.5.50, by London N.H.S.	Overmeire, East Flanders, 4.11.51.

Common Sandpiper (*Actitis hypoleucos*).

In the first of the following records the almost exact anniversary is interesting; the reservoir where ringing and recovery took place is visited only on passage.

RINGED AS FULL-GROWN.

SV.049	Colchester (Essex), 20.7.50, by C. B. Wainwright.	Where ringed, 22.7.51.
SV.248	Ditto. 25.7.50.	Ditto. 15.7.51.
SV.397	Ditto. 4.8.50.	Ditto. 21.7.51.
SV.414	Ditto. 9.8.50.	Zogno (Bergamo), N. Italy, 17.5.51.

Curlew (*Numenius arquata*).

It will be seen that the last bird in the following list was thirteen years old.

RINGED AS YOUNG.

337289	West Linton (Peebles), 19.6.51, by A. Watt.	Westport (Mayo), 12.2.52.
314693	Uldale (Cumb.), 24.6.39, by R. H. Brown.	Dumfries, 9.5.51.
333459	Langwathby (Cumb.), 11.6.48, by W. Howe.	Ardrahan (Galway), 1.1.52.
349997	Kendal (Westmor.), 23.6.51, by R. H. Brown.	Carriaghtwohill (Cork), 12.11.51.
344996	Loftus (N. Yorks.), 12.6.51, by R. Slater.	Dripsey (Cork), 18.11.51.
324606	Sedbergh (Yorks.), 25.6.51, by J. M. B. King.	Mitchelstown (Cork), -10.51.
346813	Slaidburn (Yorks.), 10.6.51, by J. K. Fenton.	Bodyke (Clare), 29.8.51.
350521	Gisburn (Yorks.), 2.6.51, by J. J. Boon.	St. Renan (Finistère), France, 7.11.51.
303993	Andreas, I. of Man, 4.6.38, by Manx F.C.	Where ringed, 6.5.51.

Common Snipe (*Capella gallinago*).

No.	Ringed.	Recovered.
SV.500	Colchester (Essex), 16.9.50, ad., by C. B. Wainwright.	St. Savinien (Charente Inf.) France, 27.1.52.

Jack Snipe (*Lymnocyptes minimus*).

K.4713	Loch Ronald (Wigtown), 8.12.50, by Lord D. Stuart.	Where ringed, 13.11.51.
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Woodcock (*Scolopax rusticola*).

237071	Gibraltar Point Bird Obs., 16.3.50	Denbigh, 11.1.52, [160 m. W.].
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Sandwich Tern (*Sterna sandvicensis*).

There are 15 further records from West Africa, as far as Angola, all in the northern winter. There is also one from Spain and one from France. A bird ringed as young on the Farne Islands was recovered in Aberdeenshire, 120 miles north, two months later.

Roseate Tern (*Sterna dougallii*).

RE.250	Ayrshire, 7.7.50, young, by F. D. E. Walls.	Axim, Gold Coast, -.11.50.
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Common Tern (*Sterna hirundo*).

RINGED AS YOUNG.

S.9648	Blakeney Point (Norfolk), 5.7.51, by F. Hamilton.	Mirdum (Friesland), Holland, 19.8.51.
V.3769	Ditto, 12.7.47, by P. F. Hill.	Cayeux (Somme), France, 23.4.51.
R.2592	Ditto, 2.8.51, by Norfolk Nat. Trust.	Dakar, Senegal, 27.12.51.

Arctic Tern (*Sterna macrura*).

It will be seen that the second bird listed below was ten years old.

RINGED AS YOUNG.

PV.029	Horse I., (Ayrshire), 27.6.51, by F. D. E. Walls.	Near Durban, Natal, 29.11.51.
TK.878	Northern Ireland, 29.6.41, by Cowin, Ladds & Williamson.	Where ringed, -.6.51.

Black-headed Gull (*Larus ridibundus*).

RINGED AS YOUNG.

342623	Leuchars (Fife), 28.5.50, by A. Cross.	Vigo, Spain, 30.1.52.
349145	Pentland Hills (Midlothian), 24.6.50, by Midlothian O.C.	Egremont (Cumb.), -.12.51 [90 m. S.].
358268	Ditto, 29.6.51, by D. G. Andrew.	Dundalk (Louth), 22.1.52.
356922	Ravenglass (Cumb.), 8.7.51, by A. E. Male.	Paisley (Renfrew), 30.9.51, [110 m. N.N.W.].

RINGED AS YOUNG.

No.	Ringed.	Recovered.
356489	Ditto, 7.7.51.	Yetholm (Roxburgh), 9.8.51, [95 m. N.N.E.].
356427	Ditto, 7.7.51.	Prestatyn (Flints.), 22.8.51, [70 m. S.].
348666	Ditto, 10.7.50.	Sutton-on-Trent (Notts.), 29.9.51, [135 m. S.E.].
344220	Ditto, 7.7.51.	Carnlough (Antrim), -.11.51.
356665	Ditto, 8.7.51.	Magheralin (Down), 29.10.51.
358754	Slaidburn (Yorks.), 23.6.51, by Holmes, Hutton & Chippendale	Bridlington (Yorks.), -.2.52, [90 m. E.].
360701	Swillington (Yorks.), 17.7.51, by Davis & Iles.	Barnes (Surrey), 24.2.52, [170 m. S.S.E.].
351920	Tregaron (Cardigan), 13.6.51, by L. G. Weller.	Runcorn (Ches.), -.9.51, [90 m. N.N.E.].
313514	Poole (Dorset), 3.6.50, by E. M. Cawke.	Near Marennes (Charente Inf.), France, 14.12.51.
327850	Strangford Lough (Down), 16.6.49, by Dublin F.C.	Auchencairn (Kirkcudbr.) 26.1.52.

RINGED AS FULL-GROWN.

342282	Kensington, London, 7.12.49, by London N.H.S.	Sæsing (Jutland), Den- mark, 30.6.51.
343764	Ditto, 29.12.49	Korsör (Zealand), Den- mark, 29.3.51.
338030	Westminster, London, 5.1.51, by London N.H.S.	Eutin (Schleswig-Holstein) 1.7.51.
332151 [315804]	Ditto, 1.3.44.	Hamburg, Germany, 21.3.52.

Common Gull (*Larus canus*).

343375	Durness (Suth.), 16.6.51, young, by E. G. Holt.	Millerhill (Midlothian), 7.2.52, [190 m. S.S.E.].
329653	Rochester (Kent), 20.2.47, ad., by P. A. Rayfield.	Sottern Lake (Örebro), Sweden, 27.6.51.

Herring-Gull (*Larus argentatus*).

RINGED AS YOUNG.

AE.2663	Black Isle (Ross), 17.7.50, by John Lees.	Toward (Argyll), -.2.52, [125 m. S.S.W.].
AE.2637	Ditto, 17.7.50.	Paisley (Renfrew), 6.1.52, [125 m. S.].
AE.2677	Ditto, 17.7.50.	Barrhead (Renfrew), 8.6.51, [128 m. S.].
AD.9787	Ditto, 3.7.50.	Castle Douglas (Kirk- cudbright), 7.6.51, [185 m. S.].

RINGED AS YOUNG.

No.	Ringed.	Recovered.
AE.5432	Ditto, 17.7.51.	St. John's Point(Down), 8.9.51.
AE.7012	Peel, I. of Man, 1.7.51, by Cowin, Crellin, Moss and Pool.	Ballywalter (Down), 30.11.51.

RINGED AS FULL-GROWN.

AN.7101	Fair Isle Bird Obs., 5.7.50.	Strathaven (Lanark.), 24.3.51.
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Lesser Black-backed Gull (*Larus fuscus*).

Of birds ringed as young in Great Britain, 5 were recovered farther south within the country, 8 in France, 3 in northern Spain and 7 in Portugal other than the extreme south. Records from more distant localities, and also one from Belgium, are given in the following list. There are winter records, one from Spain and one from Portugal, of birds ringed as adults and released experimentally at some distance within Great Britain.

RINGED AS YOUNG.

AE.4808	Farne Is. (Northumb.), 27.8.51, by Northumb. and Durham N.H.S.	Antwerp, Belgium, 17.12.51.
AE.8153	Pennine Hills (Lancs.), 29.7.51, by G. A. Bowden.	Santo Antonio (Algarve) Portugal, -2.52.
AE.7520	Ditto, 8.7.51, by J. W. Watts.	Porto Santa Maria (Cadiz), Spain, 1.1.52.
AE.7809	Ditto, 21.7.51, by Davis and Iles.	San Fernando (Cadiz), Spain, 24.11.51.
AD.6261	Skokholm Bird Obs., 16.7.49.	Tetuan, Spanish Morocco, 23.3.51.
AE.8107	Pennine Hills (Lancs.), 29.7.51, by G. A. Bowden.	Nemours, Algeria, 1.1.52.
AE.5963	Ditto, 22.7.51.	Rabat, Western Morocco, 15.2.52.
AE.3131	Ditto, 16.8.50, by Davis and Iles.	Agadir, Western Morocco, -4.51.
AD.7544	Ditto, 26.7.50, by G. A. Bowden.	Santa Cruz, Teneriffe, 28.1.51.

Great Black-backed Gull (*Larus marinus*).

407247	North Rona, 17.7.49, young, by I. Pennie. [59° 7' N., 5° 49' W.].	Auchterhouse (Angus), 1.6.51.
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Glaucous Gull (*Larus hyperboreus*).

AN.7285	Fair Isle Bird Obs., 14.12.51.	Suderoy, Færoes, 11.2.52.
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Kittiwake (*Rissa tridactyla*).

The following list includes one further transatlantic record.

RINGED AS YOUNG.

356347	Farne Is., (Northumb.), 5.7.51, by Northd. and Durham N.H.S.	Clacton (Essex), 16.12.51, [290 m. S.S.E.].
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RINGED AS YOUNG.

No.	Ringed.	Recovered.
347280	Ditto, 29.6.50.	Wallasey (Ches.), 27.6.51.
341712	Ditto, 29.6.50.	Off The Skaw, Jutland, Denmark, 30.6.51.
341696	Ditto, 29.6.50.	Off Les Sables d'Olonne (Vendée), France, 11.12.51.
362531	Lundy Bird Obs., 25.7.51.	Espinho (Douro), Portugal, -1.52.
336766	Ditto, 10.7.50.	Change Is., Notre Dame Bay, Newfoundland, 11.5.51.

Razorbill (*Alca torda*).

RINGED AS YOUNG.

AX.8845	Flannan Is., Outer Hebrides, 20.7.51, by D. G. Andrew.	Egerö, S. Norway, 7.10.51.
AX.8843	Ditto, 20.7.51.	Near Kristiansand, S. Norway, -11.51.
AX.8305	Puffin I., Anglesey, 5.7.51, by Thearle and Hobbs.	Pasajes (Guipuzcoa), Spain, 26.11.51.
AX.3363	Skokholm Bird Obs., 13.7.51.	Mimizan (Landes), France, 6.11.51.
AT.7517	Ditto, 14.7.47.	Llanes (Asturias), Spain, 20.2.48.
AX.7950	Lundy Bird Obs., 15.7.51.	Vicedo (Lugo), Spain, -1.52.
336057	Peel, I. of Man, 20.6.51, by Cowin, Crellin, Moss and Pool.	Douarnenez (Finistère), France, 20.12.51.

RINGED AS FULL-GROWN.

AX.6035	Cape Wrath (Suth.), 25.6.50, by I. D. Pennie.	Haugesund, S. Norway, 28.10.51.
AT.8041	Skokholm Bird Obs., 16.7.47.	Cobo Bay, Guernsey, 26.3.52.
AV.5587	Ditto, 9.7.49.	Montfarville (Manche), France, 26.1.52.
AV.4111	Ditto, 2.7.48.	Lesconil (Finistère), France, 21.5.51.
AN.6523	Lundy Bird Obs., 30.6.49.	Near Paimpol (Côtes- du-Nord), France, 11.3.52.

Guillemot (*Uria aalge*).

RINGED AS YOUNG.

AE.2204	Cruden Bay (Aberdeen), 2.7.51, by R. Carrick.	Bergen, Norway, 25.10.51.
AE.2258	Ditto, 10.7.51.	Egersund, S. Norway, -10.51.
AE.2254	Ditto, 10.7.51.	Near Langesund, S. Norway, 26.12.51.

RINGED AS YOUNG.

No.	Ringed.	Recovered.
AX.8401	Puffin I., Anglesey, 6.7.51, by Thearle and Hobbs.	Portrush (Antrim), 13.10.51.
AX.8385	Ditto, 6.7.51.	Minard, Loch Fyne, (Argyll), 3.11.51.
AE.7356	Lundy Bird Obs., 25.7.51.	Inverness 3.10.51, [435 m. N.].
AX.8181	Ditto, 18.7.51.	Near Nevin (Caerns), 23.9.51.
AD.9078	Ditto, 20.7.51.	St. Helier's, Jersey, -8.51.
AX.8187	Ditto, 18.7.51.	St. Malo (Ille-et-Vilaine) France, 26.10.51.
AE.7148	Ditto, 20.7.51.	Le Pouldu (Finistère), France, 14.9.51.
AD.9086	Ditto, 20.7.51.	Near Douarnenez (Finistère), France, 27.9.51.
AX.7912	Ditto, 15.7.51.	Ile de Ré (Charente Inf.), France, 1.11.51.
AE.7254	Ditto, 21.7.51.	St. Jean de Luz (B.-P.), France, 13.2.52.

RINGED AS FULL-GROWN.

AE.1061	Mingulay, Outer Hebrides, 22.6.50, by Myles Smith.	Near Bergen, Norway, 11.11.51.
AE.1336	Cape Wrath (Suth.), 4.7.50, by I. D. Pennie.	Söster Is., Oslo Fjord, Norway, 14.11.51.

Moorhen (*Gallinula chloropus*).

AN.6731	Colchester (Essex), 9.11.49, by C. B. Wainwright.	Spijk (Groningen), Holland, 17.9.51.
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Coot (*Fulica atra*).

AE.3906	Colchester (Essex), 15.3.51. by C. B. Wainwright.	Near Heide (Schleswig-Holstein), Germany, 5.5.51.
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Table I.

NUMBER OF BIRDS RINGED.

					Trapped	Nestlings	Total
In 1951	49,364	36,379	85,743
„ 1950	...	...	...	...	42,112	33,994	76,106
„ 1949	...	...	...	...	27,496	29,965	57,461
„ 1948	...	...	...	...	18,413	20,911	39,324
„ 1947	...	...	...	...	14,574	14,007	28,581
„ 1946	...	...	...	...	8,909	8,412	17,321
„ 1945	...	...	...	...	1,875	5,419	7,294

Grand Total (including arrears) 1,040,458.

Table II.

NAMES OF THOSE RETURNING 100 AND OVER.

D. R. Anderson	Fair Isle Bird Obs.	A. G. Parsons
D. G. Andrew	J. K. Fenton	N. G. Partridge
J. F. Anton	J. Field	I. D. Pennie
S. K. Armitstead	Miss Flower	R. Perry
R. W. Arthur	Gibraltar Point Bird	A. E. Platt
Ash & Ridley	Obs.	M. R. K. Plaxton
R. H. Baillie	I. M. Goodbody	R. H. Poulding
C. C. Balch	F. G. Grey	W. T. C. Rankin &
I. V. Balfour-Paul	F. C. Gribble	Birkenhead School
R. M. Band	F. M. Gurteen	P. A. Rayfield
J. Bartholomew	Halifax Sci. Soc.	P. V. Robinson
F. R. Bean	F. Hamilton	R. W. Robson
Bedford School	J. A. Hardman	K. B. Rooke
G. A. Bowden	P. F. Hill	St. Edmund's School
J. W. Brennan	P. W. Hinde	Saltee Bird Obs.
F. J. Brown	Holmes, Hutton &	Scottish Society P.W.B.
R. H. Brown	Chippendale	Sedburgh School
P. S. Burns	E. G. Holt	Miss Shaddick
W. A. Butterfield	W. Howe	Shrewsbury School
E. J. M. Buxton	V. Huddleston	Skokholm Bird Obs.
G. H. C. Byford	J. Hughes	R. Slater
Cambridge Bird Club	A. G. Hurrell	A. H. Smith
B. Campbell	Huyton & Low	I. B. Smith
R. Carrick	Lord Ilchester	R. G. Smith
P. J. Chadwick	A. H. Johnson	R. W. J. Smith
R. Chislett	J. M. B. King	K. G. Spencer
P. R. Clarke	Mrs. Knowles	R. Spencer
Clayesmore School	Leics. & Rutland Orn.	Spurn Bird Obs.
F. B. Clemson	Society	Lord David Stuart
Cley Bird Obs.	John Lees	Thearle & Hobbs
E. Cohen	Leighton Park School	J. F. Thomas
D. G. Cotgrave	Miss Levy	H. A. Thompson
J. C. Coulson	London N.H.S.	Uppingham School
L. A. Cowcill	Lundy Bird Obs.	Mrs. Upton
Cowin, Crellin, Moss	K. S. Macgregor	H. Van den Bos
& Pool	A. E. Male	L. S. V. Venables
J. B. C. Crompton	Isle of May Bird Obs.	C. B. Wainwright
A. Cross	J. M. McMeeking	I. Walker
R. W. Crowe	Midlothian Orn. Club	A. Wallis
J. Cudworth	J. D. Mills	F. D. E. Walls
A. Darlington	D. R. Mirams	J. W. Watts
Davis & Iles	N. C. Moore	L. G. Weller
R. F. Dickens	G. R. Mountfort	Wharfedale Nat. Soc.
Dublin Field Club	C. A. Norris	Wildfowl Inq. Ctee.
Edward Grey Institute	Northumberland &	R. G. Williams
R. Elmes	Durham N.H.S.	J. J. H. Wilson
A. E. English	Oundle School	Wolton & Mead-Briggs
E. A. R. Ennion	Oxford Orn. Society	

Table III.

NUMBERS OF EACH SPECIES RINGED, 1951.

						1909-1950	1951	Grand	
						1950	Trapped Nestlings	Total	Total
Raven	...	...	...	...	...	398	—	50	448
Crow, Carrion	...	...	...	...	...	2,358	12	107	2,477
Rook	...	...	...	...	...	5,777	122	145	6,044
Jackdaw	...	...	...	...	...	5,331	272	170	5,773

					1909—	1951—	Grand		
					1950	Trapped Nestlings	Total	Total	
Magpie	1,925	28	113	141	2,066
Jay	864	23	48	71	935
Chough	100	—	11	11	111
Starling	89,260	10,777	1,044	11,821	101,081
Greenfinch	37,019	1,427	489	1,916	38,935
Goldfinch	856	42	89	131	987
Redpoll, Lesser	708	2	4	6	714
Linnet	13,127	668	587	1,255	14,382
Bullfinch	2,108	24	101	125	2,233
Chaffinch	43,099	2,010	656	2,666	45,765
Brambling	1,372	345	—	345	1,717
Sparrow, Tree-	2,981	74	77	151	3,132
Bunting, Yellow	7,494	226	182	408	7,902
Bunting, Reed-	2,903	319	134	453	3,356
Lark, Sky-	4,276	125	243	368	4,644
Pipit, Tree-	2,336	24	84	108	2,444
Pipit, Meadow-	7,503	550	208	758	8,261
→ Pipit, Rock-	1,393	188	76	264	1,657
Wagtail, Yellow	1,637	67	111	178	1,815
Wagtail, Grey	1,246	8	75	83	1,329
→ Wagtail, Pied...	8,443	280	299	579	9,022
Shrike, Red-backed	1,119	15	42	57	1,176
Flycatcher, Spotted	5,075	115	404	519	5,594
Flycatcher, Pied	3,970	283	651	934	4,904
Chiffchaff	1,615	208	60	268	1,883
Warbler, Willow-	16,567	1,170	675	1,845	18,412
Warbler, Wood-	1,448	8	88	96	1,544
Warbler, Sedge-	2,118	170	73	243	2,361
Warbler, Garden-	1,707	92	28	120	1,827
Blackcap	1,420	112	57	169	1,589
Whitethroat	7,895	907	333	1,240	9,135
Thrush, Mistle-	5,971	63	269	332	6,303
Thrush, Song-	77,302	1,074	1,991	2,965	80,267
Redwing	1,235	145	—	145	1,380
Ouzel, Ring-	749	27	31	58	807
Blackbird	76,421	3,354	2,917	6,271	82,692
Wheatear	3,231	395	387	782	4,013
Whinchat	2,164	104	88	192	2,356
Stonechat	1,239	20	44	64	1,303
Redstart	3,568	210	270	480	4,048
Robin	31,804	3,668	1,047	5,715	37,519
Sparrow, Hedge-	19,423	1,222	471	1,693	21,116
Wren	4,750	300	58	358	5,108
Dipper	2,272	10	77	87	2,359
Swallow	54,219	144	1,840	1,984	56,203
Martin, House-	4,574	133	565	698	5,272
Martin, Sand-	5,574	56	285	341	5,915
Swift	1,801	82	160	242	2,043
Kingfisher	805	—	7	7	812
Cuckoo	1,085	52	44	96	1,181
Owl, Little	1,022	7	46	53	1,075
Owl, Long-eared	323	10	11	21	344
Owl, Barn-	887	2	38	40	927
Owl, Tawny	1,571	12	76	88	1,659
Falcon, Peregrine	126	1	4	5	131
Merlin	369	7	11	18	387
Kestrel	1,339	13	85	108	1,447
Buzzard	574	8	34	42	616

3065

4715

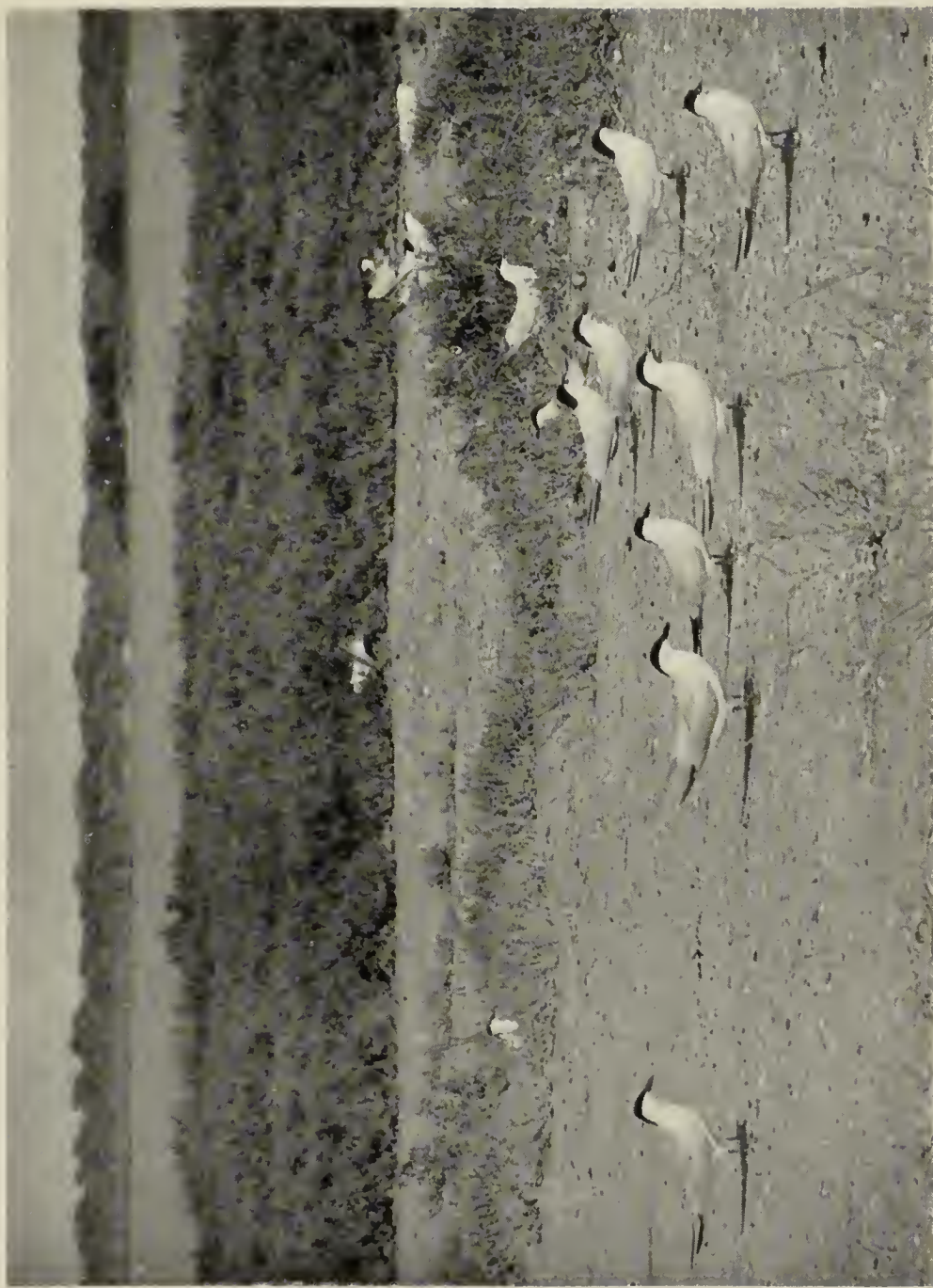
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				1909-	1951-----			Grand
				1950	Trapped	Nestlings	Total	Total
Hawk, Sparrow-	1,010	21	28	49	1,059
Heron, Common	...	...	...	2,566	1	62	63	2,629
Duck, Sheld-	...	...	...	522	1	4	5	527
Mallard	...	...	...	8,676	684	13	697	9,373
Teal	...	...	...	7,631	2,564	—	2,564	10,195
Wigeon	...	...	...	798	26	—	26	824
Duck, Tufted	...	...	...	378	49	—	49	427
Goosander	...	...	...	52	—	—	—	52
Cormorant	...	...	...	3,065	2	158	160	3,225
Shag	...	...	...	2,512	20	174	194	2,706
Gannet	...	...	...	12,832	3	230	233	13,065
Petrel, Storm-	...	...	...	1,252	56	—	56	1,308
Shearwater, Manx	...	...	...	39,604	2,184	698	2,882	42,486
Petrel, Fulmar	...	...	...	1,003	193	131	324	1,327
Pigeon, Wood-	...	...	...	4,837	10	242	252	5,089
Dove, Stock-	...	...	...	1,173	14	96	110	1,283
Dove, Turtle-	...	...	...	831	10	16	26	857
Curlew, Common	...	...	...	3,943	15	261	276	4,219
Woodcock	...	...	...	5,480	10	21	31	5,511
Snipe, Common	...	...	...	1,992	15	70	85	2,077
Dunlin	...	...	...	203	12	1	13	216
Sandpiper, Common	...	...	...	1,410	72	138	210	1,620
Redshank	...	...	...	3,020	14	106	120	3,140
Plover, Ringed	...	...	...	2,122	15	176	191	2,313
Plover, Golden	...	...	...	406	—	5	5	411
Lapwing	...	...	...	46,954	98	1,687	1,785	48,739
Oyster-catcher	...	...	...	2,962	17	260	277	3,239
Curlew, Stone-	...	...	...	279	—	12	12	291
Tern, Sandwich	...	...	...	21,584	—	1,283	1,283	22,867
Tern, Roseate	...	...	...	1,290	—	154	154	1,444
Tern Common	...	...	...	21,860	6	1,162	1,168	23,028
Tern, Arctic	...	...	...	5,236	—	777	777	6,013
Tern, Little	...	...	...	1,160	—	26	26	1,186
Gull, Black-headed	...	...	...	20,051	76	2,641	2,717	22,768
Gull, Common	...	...	...	3,094	12	232	244	3,338
Gull, Herring-	...	...	...	13,669	112	1,241	1,353	15,022
Gull, Lesser Black-backed	...	...	...	13,544	28	1,632	1,660	15,204
Gull, Great Black-backed	...	...	...	962	3	40	43	1,005
Kittiwake	...	...	...	3,068	91	658	749	3,817
Skua, Great	...	...	...	855	1	4	5	860
Razorbill	...	...	...	7,057	51	228	279	7,336
Guillemot	...	...	...	3,617	270	679	949	4,566
Puffin	...	...	...	7,087	260	308	568	7,655
Crake, Corn-	...	...	...	621	7	—	7	628
Moorhen	...	...	...	2,383	264	14	278	2,661

NUMBERS RINGED IN 1951 OF SPECIES NOT SHOWN IN THE TABLE.

(The figures in brackets show the Grand Total.)

Hooded Crow 7 (172), Hawfinch 1 (129), Siskin 2 (26), Twite 68 (740), Scarlet Grosbeak 2 (5), House-Sparrow 3,284 (12,379), Little Bunting 1 (2), Corn-Bunting 14 (155), Red-headed Bunting 1, Cirl Bunting 5 (111), Ortolan Bunting 1 (6), Snow-Bunting 15 (171), Wood-Lark 57 (190), Tawny Pipit 1, American Water-Pipit 1, White Wagtail 17 (144), Tree-Creeper 48 (790), Nuthatch 94 (1,014), Great Tit 1,752 (15,705), Blue Tit 5,009 (29,424), Coal-Tit 232 (1,795), Crested Tit 2 (4), Marsh-Tit 49 (647), Willow-Tit 11 (77), Long-tailed Tit 26 (241), Goldcrest 236 (1,005), Bearded Tit 1 (42), Red-breasted



GULL-BILLED TERN (*Gelochelidon nilotica*).

GENERAL VIEW OF BREEDING AREA. RHONE DELTA, JUNE, 1950.

(Photographed by G. K. YEATES).



GULL-BILLED TERN (*Gelochelidon nilotica*).
ADULT AT NEST. RHONE DELTA, JUNE, 1950.
(Photographed by G. K. YEATES).



GULL-BILLED TERN (*Gelochelidon nilotica*).

ALIGHTING AT NEST. RHONE DELTA, JUNE, 1950.

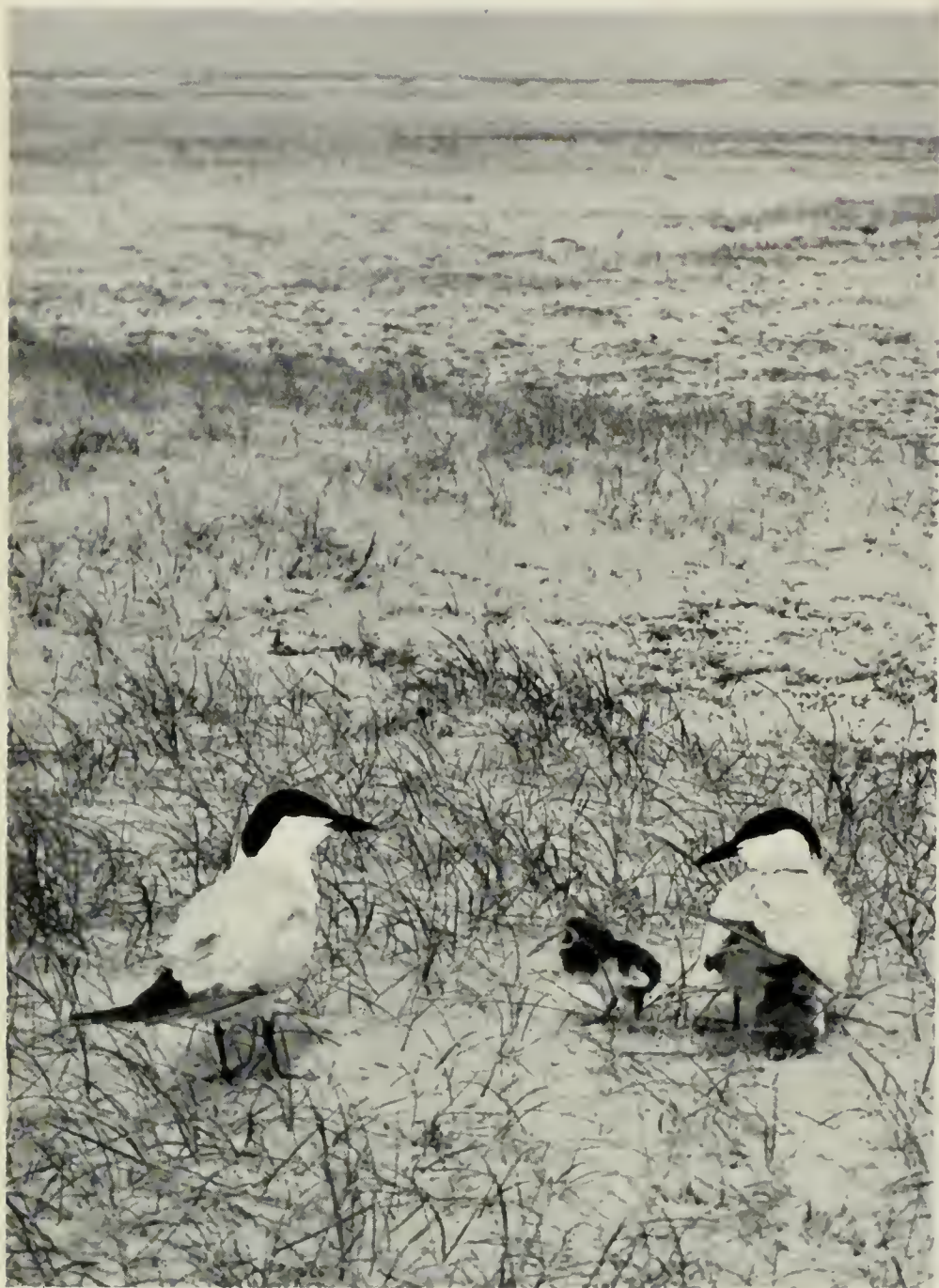
(Photographed by G. K. YEATES).



SANDWICH TERN (*Sterna sandvicensis*),
ADULT INCUBATING. BLAKENEY, NORFOLK.
(Photographed by G. K. YEATES)



GULL-BILLED TERN (*Gelocheidon nilotica*).
ADULT INCUBATING. RHONE DELTA, JUNE, 1950.
(Photographed by G. K. YEATES).



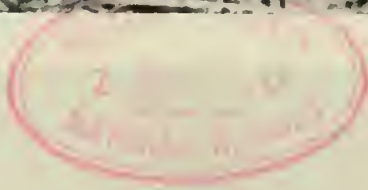
GULL-BILLED TERN (*Gelochelidon nilotica*).
PAIR WITH TWO CHICKS. NEAR HOOK-OF-HOLLAND, JUNE, 1949.
(Photographed by SIMON DE WAARD).



GULL-BILLED TERN (*Gelochelidon nilotica*).

PAIR, ONE FEEDING INSECT TO NESTLING. NEAR HOOK-OF-HOLLAND, JUNE, 1949.

(Photographed by SIMON DE WAARD).



UPPER : GULL-BILLED TERN (*Gelocheidon nilotica*).
TWO NESTLINGS. NEAR HOOK-OF-HOLLAND, JUNE, 1940.
(Photographed by SIMON DE WAARD).

LOWER : GULL-BILLED TERN (*Gelocheidon nilotica*).
ADULT OVER BREEDING AREA. NEAR NEUSIEDLER SEE, E. AUSTRIA, MAY, 1938.
(Photographed by P. O. SWANBERG).

Flycatcher 3 (26), Great Grey Shrike 4 (11), Pallas's Warbler 1, Grasshopper-Warbler 23 (170), Yellow-browed Warbler 4 (20), Reed-Warbler 153 (1,509), Melodious Warbler 1, Olivaceous Warbler 1, Icterine Warbler 10 (22), Barred Warbler 4 (19), Dartford Warbler 23 (34), Lesser Whitethroat 89 (854), Subalpine Warbler 2, Fieldfare 25 (211), Black Redstart 28 (187), Bluethroat 4 (21), Nightingale 70 (2,698), Nightjar 5 (302), Wryneck 10 (377), Green Woodpecker 22 (219), Great Spotted Woodpecker 43 (277), Short-eared Owl 25 (178), Golden Eagle 2 (17), Marsh-Harrier 2 (58), Montagu's Harrier 7 (139), Hen-Harrier 22 (136), Pink-footed Goose 642 (673), White-fronted Goose 30 (116), Canada Goose 40, Grey Lag-Goose 18 (51), Gadwall 2 (47), Garganey 5 (14), Pintail 45 (243), Shoveler 24 (136), Pochard 3 (69), Eider 3* (916), Red-breasted Merganser 1 (8), Leach's Fork-tailed Petrel 123 (219), Great Crested Grebe 1 (18), Little Grebe 5 (35), Red-throated Diver 2 (4), Rock-Dove 4 (64), Little Ringed Plover 6 (38), Turnstone 9 (28), Ruff 4 (7), Greenshank 2 (19), Sanderling 2 (10), Purple Sandpiper 1 (2), Green Sandpiper 6 (15), Wood-Sandpiper 3 (5), Little Stint 1, Jack Snipe 2 (5), Arctic Skua 27 (164), Black Guillemot 30 (209), Little Auk 1 (5), Water-Rail 21 (76), Coot 45 (331).

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLIV. THE GULL-BILLED TERN.

Photographed by

P. O. SWANBERG, SIMON DE WAARD AND G. K. YEATES.

(Plates 73-75 and 77-80).

WITH A PHOTOGRAPH OF THE SANDWICH TERN, BY G. K. YEATES,
FOR COMPARISON.

(Plate 76).

THE photographs published this month form an appropriate accompaniment to the paper by G. A. Pyman and Major-General C. B. Wainwright on the first breeding in Britain of the Gull-billed Tern (*Gelochelidon nilotica*), an almost cosmopolitan bird, yet one that is rather local in many parts of its range. Although a regular European breeding species, it has always, as far as we know, been no more than a rare wanderer to Britain, and there are only some sixty-five occurrences on record. Probably it is somewhat overlooked. In Europe, apart from the Mediterranean area, the species' main strength is in Denmark where there are several moderate-sized colonies in west and north Jutland. Occasionally Gull-billed Terns nest elsewhere in Denmark, also on the East Frisian Islands. Some evidence of a recent spread in the North Sea area, apart from the Essex record, comes from Holland where the species first bred in 1931 in the sanctuary "De Beer", near the Hook-of-Holland. During the late 1930's and early 1940's the bird was regularly reported during the summer, but it was not until 1944 that they nested again—in the Makkumerwaard in Friesland. In 1945 there were two nests (though probably only one pair) in the Wieringmeerpolder in north Holland, flooded by the Germans. In 1947 it is

probable that they nested on Texel, and a pair was seen there in 1951. At "De Beer" regular breeding began in 1949 (*vide* p. 339) and since then there have been three, sometimes four, pairs nesting there each year. Having established itself in these very small numbers in Holland, it is to be hoped that the Gull-billed Tern will continue the attempt to colonise England in the same way. Recent British occurrences, all from Sussex, have been published this year (*antea*, pp. 262-263) and the 1952 records received to date are on page 371. We are very grateful to Miss Gré van der Baan and J. E. Sluiters for their help with the details of the Dutch breeding records.

The fine pictures of Gull-billed Terns here come from the Rhone delta, from Holland and from E. Austria. Plates 78, 79 and 80 (upper) are of the nest at "De Beer" described on pages 339-341. In plates 74, 75 and 77 the diagnostic features of this tern's bill can clearly be seen and a comparison should be made with G. K. Yeates' photograph on plate 76 of a Sandwich Tern (*Sterna sandvicensis*), showing the longer, finer bill with a yellow tip. Unfortunately, in this photograph, the last feature does not show up as well as it might because of the back-ground of a light stone (but perhaps a moral should be drawn from this, for in the field it is often more difficult to be certain of a negative character). The longer streamers of the Sandwich Tern can be compared with those of the incubating Gull-billed Tern in plate 76 and the bird alighting in plate 75. In plate 78 it can be seen how the Gull-billed Tern stands rather higher off the ground than the Sandwich, owing to its longer tarsus. The rather darker primaries of the Gull-billed species can be seen in all the close-up studies, but this is of uncertain value in field-identification, even when the birds are in summer plumage.

In plate 79 one of the adults is feeding an insect to the chick and it is in its food and feeding-habits that the Gull-billed Tern differs particularly from the *Sterna* species. It is not a sea tern, and fish form only a very small proportion of its diet. In America it used to be known as the Marsh-Tern (although it does nest there on sandy beaches as well as on salt-marshes). The species is in many places to a large extent insectivorous, feeding almost entirely over the land, where the insects, which include beetles, grasshoppers, locusts, etc., may be taken on the ground or in the air. Thus it is significant that Audubon in his *The Birds of America* portrayed this bird in pursuit of an insect, but other common prey include mice, frogs, crabs and the young and eggs of other birds. Although fish are comparatively seldom taken, in some parts of its range the bird feeds on tadpoles, water-spiders, fish fry and water-beetles caught up from the surface of the water. Comparatively rarely do they plunge in like the *Sterna* species, or settle on the water.

I. J. F.-L.

OBSERVATIONS ON THE COLLECTION AND BURIAL OF ACORNS BY JAYS IN HAINAULT FOREST.

BY

M. R. CHETTLEBURGH.

The Handbook states that the Jay (*Garrulus glandarius*) shares with several other *Corvidæ* the habit of burying surplus food. During the autumn of 1951, observations were made in Hainault Forest, in Essex, on the intensity of this habit with acorns. Although it is well known that the Jay does bury, or hide away acorns, there appears to be comparatively little literature on the subject, especially concerning the quantitative aspects and apparent importance of the habit. In 1950, L. Schuster wrote a paper based on work done by him in Vogelsberg, Germany, (briefly reviewed in *Ibis*, 93: 158) and, where appropriate, I have tried to compare his results with my own, but, for a more strict comparison, reference to the paper can be made.

Hainault Forest is an area about $1\frac{1}{2}$ miles long by 1 mile wide. Except for the new housing estate that borders the western side, it is completely surrounded by agricultural country, which is comparatively devoid of Jays. Single oak trees are found scattered all over the area, but only in one place can it be said to be the dominant tree, and it is here, in a separate wood apart from the rest of the forest, that several grow side by side. This small wood, which in the spring normally holds two breeding pairs of Jays, was apparently the only place from which acorns were collected, presumably due to the fact that the greatest number of oak trees were to be found there.

The collection and burial of acorns commenced, as far as we could ascertain, on or about September 9th. On that date no more than eight birds were taking part, and this continued until about September 28th. From then the intensity grew, and this number gradually increased until the middle of October, when some 35 to 40 birds were involved. As at this time no other Jays were ever seen elsewhere it seems possible that the majority, if not all, of the population had congregated in this one area where acorns were most abundant. After about October 20th the number of birds collecting began gradually to decrease, until November 16th, when Jays were last seen transporting acorns. As in Germany, it appeared that the end of the activity coincided, as far as it was possible to ascertain, with the removal of all the acorns.

At the beginning of the collecting period (i.e. in September) the birds worked mainly between 09.00 and 12.00 hours G.M.T., but as the movement neared its peak, around October 14th, they were working from sunrise until just after sunset, about 10 hours

per day. At this time it was possible to witness a continuous stream of birds flying to and from the collecting area. One might even say that at this time one could not see a Jay that was not either collecting, transporting, feeding on or burying acorns. By recording the number of birds flying to and fro per hour, we were able to ascertain that there was a greater activity between 09.30 and 11.30 hours; Schuster found the same for the mid-day hours. Apart from this however, we could find nothing to indicate that the number of transport flights varied with the time of day or with the weather.

During the peak period the average time taken by a Jay in collecting, carrying and burying an acorn and in returning to the trees was about ten minutes. The peak period (around October 14th) lasted about ten days in which time each bird made an average of about six flights per hour, *i.e.* about sixty flights per day. If, say, 35 birds were taking part, this meant 2,100 flights per day—a total of 21,000 for the whole ten days.

When a Jay arrived at the collecting trees it would bound about the branches until it spied a favoured acorn and it would then lean over, sometimes flapping its wings to avoid over-balancing, seize the acorn from its cup and “swallow” it. This would be repeated until it had two or three acorns in its gullet, and usually with another held in the bill it would then depart for the burial areas. Very occasionally only one would be placed in the gullet, but we never observed more than three, and two seemed the usual number, with another in the bill. Therefore, assuming that the average transport flight carried three acorns, in the ten days of the peak period alone, at least 63,000 acorns were buried. At the very commencement of the operations (with about eight birds working only three hours per day) between 140 and 170 flights were being made each day and in the region of 450 or 500 acorns were being buried, but owing to variation in the number of Jays working outside the peak period it is more difficult to state the total number of acorns buried in the whole autumn, but we have calculated it to be approaching the 200,000 mark. Schuster found that his sixty-five birds, working for approximately one month, buried about 300,000 acorns. On this basis just over half that number of birds (*i.e.* our thirty-five), in ten days (our peak period), would bury something over 50,000. Shortage of space here prevents a fuller discussion of our figures, but points to be borne in mind when comparing them with Schuster's results are the greater average number of flights per hour in Hainault, and the longer distances flown by the Vogelsberg Jays (up to 4 or 5 km., about four times as far as the maximum recorded at Hainault). A greater activity on one side may be possible. In considering the facts, however, one must bear in mind that Schuster suggested the minimum number of acorns carried per flight to be five, and based his calculations of a total of 300,000

on that number. However, he believed more to be usual and he thought eight or nine acorns could be carried in the gullet, and gives instances of birds engaged on transport flights being shot and found to be carrying that number.

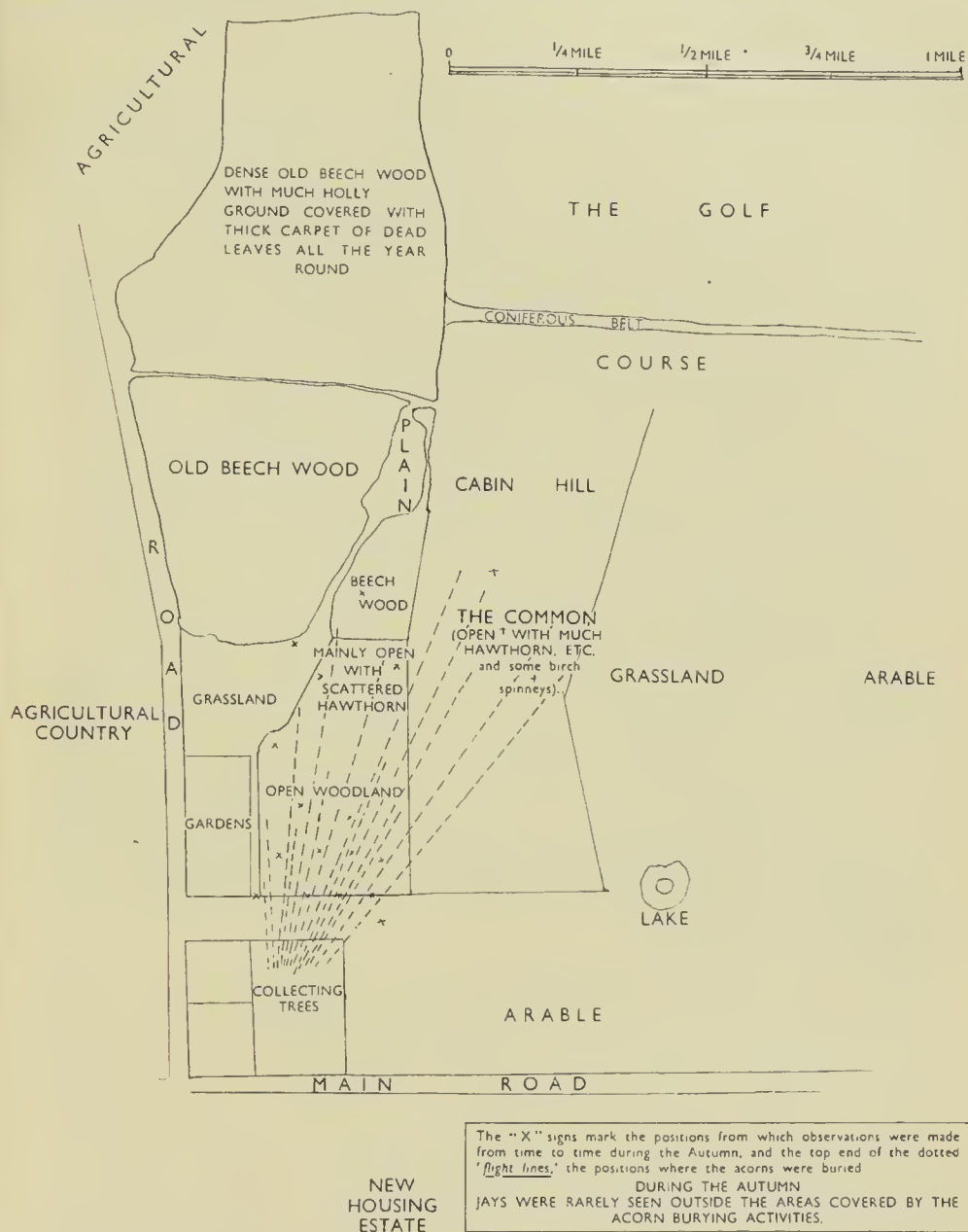


FIG. 1. HAINAULT FOREST. MAP TO SHOW WHERE ACORNS WERE COLLECTED AND BURIED

The accompanying map (fig. 1) shows the routes taken by the Jays, which we, unlike Schuster, found did not zig-zag or wind, probably due to the shorter distances. The birds would fly from the collecting trees and down these routes singly and showed no

tendency whatsoever to follow any other Jays or fly out in groups or parties as Schuster's did, and it appeared that each was to all intents and purposes only concerned with the transporting of its own acorns. Of course, occasionally two or three Jays might leave the collecting trees within seconds of one another, but in such circumstances, more often than not, they took different flight lines to different burial areas. It appeared that an individual would fly to one burial area several times in succession, but if disturbed there would change it for another (rather than wait for the intruder to leave) as they appeared to do of their own accord from time to time during the day. Why the Jays never went further than three quarters of a mile to hide their acorns we were not able to tell (Schuster's birds flew up to 4 or 5 km.) but it may have been that, whereas Hainault's thirty-five Jays had their most popular and suitable burial places within a mile of the collecting trees, Schuster's birds had to fly (and were prepared to fly) much further to reach theirs. This habit of course results in a more widespread planting of oak trees (*i.e.* from those acorns not recovered in the ensuing winter). When burying in the more open woodland nearer the collecting trees the Jays flew much lower than when they were burying in the further areas. In the former case, the birds rarely flew above tree-top height and were in the habit—after crossing the green that separates the rest of the forest from the collecting wood—of making their way from tree to tree until over the selected spot. Later however, when that part had been deserted as a burial ground, they would fly right over it, keeping at between fifteen and thirty feet above the tree tops. When they reached the burial ground (if a spinney) they would drop down into it and make their way to the actual position through the tree tops in the manner just described. Schuster found that his birds did the same thing, even if the burial place lay right in the heart of a wood.

The most favoured place for hiding an acorn was under a thin covering of dead leaves. Here the Jays could find many small holes, depressions, cracks or crevices into which an acorn could easily be ejected and then covered up. If such a hole or depression was not readily available the acorns would be pushed under the trailing root of a bramble or other plant, or under the roots of a tree or generally into any niche capable of hiding an acorn. Sometimes a Jay would appear to dig its own hole (having therefore temporarily to put down the acorn in its bill), but natural holes were much preferred. Unlike Schuster, we could find no evidence of these acorns being forgotten when laid on one side, or of a bird apparently marking a spot where an acorn was buried with a large leaf, pebble, clod of earth, etc. (Goodwin 1951). Nor did we see a Jay place two acorns in one hole, possibly due to the abundance of suitable places. It also

appeared that a Jay did not like to bury its acorns far away from covering bushes or trees nor were they recorded pushing acorns into the bark above ground level. When burying acorns, as when collecting them, the Jays did not show any aggressiveness towards other birds of their own or another species.

The birds first appeared to dig up the buried acorns about a week after the end of the movement. The number of small oaks scattered here and there far away from mature oak trees seems to suggest that the Jay does not find all the acorns it buries, although of course the Jay might not be the reason for all the young trees as other agencies also bury surplus food and in Hainault young boys indulge in throwing acorns at one another in the autumn. Whether a Jay actually remembers the place where an acorn is buried is a debatable point, but from over a score of records (which are rather difficult to obtain in the area in question) it would appear that it does, and does not just find them by random searches in likely places. On every occasion I have witnessed a Jay retrieve an acorn a similar routine has been performed. Each bird, after perching on the lower branches of a tree, has hopped onto the ground, bounded straight to a given spot, stopped, dug furiously with its bill and in due course taken out an acorn; it has then flown away with it—sometimes acorns are reburied elsewhere (Goodwin, private communication). The digging when a buried acorn is to be found is very different from the tentative pecking of a casual food-search. Of course there is always a chance that when searching at random a Jay might come across a hidden acorn, but I personally have never known such an instance. We have noticed that Jays in the winter were more often seen in the areas where they had previously buried acorns and it is possibly correct to assume that some Jays rely to some extent on acorns buried the previous autumn as their winter food. Like Schuster, we found that Jays were very bold when collecting and burying acorns, but this was not so when they were digging them up and unfortunately their shyness often leads to their flying away at the approach of an observer, thereby preventing observation long enough to see how much they rely on buried acorns for winter food.

SUMMARY.

1. Observations were made on the intensity of acorn-burying by Jays in Hainault Forest, Essex.
2. Acorns were collected from one part of the area only, *i.e.* from where they were most abundant.
3. The activity, which commenced on or about September 9th, increased to a peak lasting ten days around October 14th and thereafter decreased gradually until it ceased altogether on November 16th.

4. In the peak period, when activity was at its height, it is calculated that some 63,000 acorns were buried. A figure of 200,000 is estimated for the whole period.

5. Acorns were buried up to three-quarters of a mile from the collection area.

6. The general behaviour of the Jays at this time is discussed and the observations are compared with similar ones made in Germany.

ACKNOWLEDGMENTS.

I should like to acknowledge the help given by Messrs. P. Stevenson, E. Eldridge, G. Lucey and others when the observations were being made and my thanks are also due to Mr. J. Boswell, Mr. Derek Goodwin and Dr. David Lack for perusing the draft of this paper and for Mr. Goodwin's observations and suggestions throughout the course of the study.

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NOTES.

Jays and Magpies eating wasps.—In reference to the notes on reactions of birds to wasps (*antea*, vol. xlv, pp. 406-407) it seems worth recording that my captive Jays (*Garrulus glandarius*) eat wasps readily, and I have no doubt wild Jays do likewise when they get the opportunity. The Jay bites hard as it seizes the wasp, thus disabling it. It then quickly puts it down and bites the rear end of the abdomen hard several times. After this the wasp is eaten without further precautions. No attempt is made to remove the sting, but presumably this treatment renders it harmless by rupturing the poison gland and dispersing its contents. This behaviour is innate; two juvenile Jays that had never seen wasps before treated them in the same manner as experienced birds.

The stomach of a Magpie (*Pica pica*) found—in company, *inter alia*, with Barn-Owls (*Tyto alba*)—on a keeper's gibbet in winter, contained, besides a quantity of barley, three queen wasps (*Vespa* ?*s.p.*) so in all probability this bird is also a wasp-eater.

DEREK GOODWIN.

Starling imitating telephone bell.—In the late spring of 1951, a Starling (*Sturnus vulgaris*) in my garden gave an imitation of a telephone bell so perfectly that it deceived my wife into coming in from the garden and picking up the receiver. The sound imitated was that of the telephone bell ringing inside the house, but heard from outside it. Only on returning to the garden did she discover the source of the sound. The intervals between the double "rings" were exact.

S. H. CHALKE.

Greenfinch imitating Redstart.—On April 29th, 1951, near Bewdley, Worcestershire, we were surprised to hear what was apparently a Redstart (*Phoenicurus phoenicurus*) singing from a tree in which the only bird to be seen was a Greenfinch (*Chloris chloris*). The bird, which appeared to be an adult male, was watched with binoculars and $\times 25$ telescope while actually singing, and was undoubtedly responsible for the song, which was repeated several times. There seems little doubt that this was a genuine case of mimicry. Redstarts were common in the area.

A. W. CUNDALL, P. EVANS AND J. SEARS.

Chaffinch building in deserted Song-Thrush's nest of the same season.—On February 26th, 1951, a Song-Thrush (*Turdus ericetorum*) had nearly or quite finished building a nest in a bush at Sway, Hants. By March 5th the nest was deserted without any eggs having been laid. On May 19th a Chaffinch (*Fringilla cœlebs*) was building in the cup of this nest, not centrally, but against one edge of it. Four eggs were laid and possibly two young, not more, reared. The nest was decidedly insecure and may have collapsed before the young were ready to fly.

EDWIN COHEN.

Fly-catching by buntings.—With reference to the notes on flycatching by Reed-Buntings (*Emberiza schœniclus*) (*antea*, vol. xliii, pp. 222, 370, xliv, p. 387) I might mention that I recorded in 1932 (*Journ. Bombay Nat. Hist. Soc.*, xxxvi; 264) watching at close range a very large flock of Yellow-breasted Buntings (*E. aureola*) sitting in a patch of bushes and hawking for flying ants in Burma.

J. K. STANFORD.

Tawny Pipit in Essex.—On August 31st, 1951, at Colne Point, Essex, we had excellent close views of a Tawny Pipit (*Anthus campestris*). It was first seen perched on telephone wires and later flew to the ground. The chief characteristics noted were the extremely pale upper-parts, almost or quite unstreaked under-parts, the eye-stripe and the soft rather musical disyllabic call quite unlike that of any other pipit and somewhat recalling that of a Yellow Wagtail (*Motacilla flava*). Members of the latter species were near it for comparison. Though obviously a pipit not a wagtail, the bird appeared to some extent intermediate between the two genera in its field characters, including the long tail. We have seen the species before, in Holland, and one of us

has also seen and heard all the other European species of *Anthus*. This appears to be the first record of the Tawny Pipit for Essex.

D. AND E. LACK.

Male Red-backed Shrike begging food from female.—A pair of Red-backed Shrikes (*Lanius collurio*), with young not long out of the nest, was watched near Streatley, Berkshire, on July 25th, 1951, both birds flying about and perching while exhibiting normal intruder-reactions. These responses diminished as I moved away and the two adults, the female with food in her bill, were stationed near each other. The male then performed typical food-begging, soliciting the female, which did not respond, with quivering wings and open bill.

The present example is indeed a curious and unusual reversal of normal procedure, for in the vast majority of cases food-begging is a female function (Lack, *Auk*, vol. 57, pp. 169-178). This author gives a case somewhat similar to the present one, in which a captive male Robin (*Erithacus rubecula*) was seen to beg from the female.

K. E. L. SIMMONS.

Spotted Flycatchers feeding nestling Blackbirds.—During the summer of 1949, a pair of Blackbirds (*Turdus merula*) built their nest in a creeper against the wall of a house at Mere, Wiltshire.

Later, a pair of Spotted Flycatchers (*Muscicapa striata*) constructed a nest on the guttering of the house just above the Blackbird's nest. When the nestling Blackbirds were about a week old, the Flycatchers' nest, now containing eggs, was blown off the guttering in a gale. The following day, the Flycatchers were observed carrying butterflies to the nestling Blackbirds and pushing them down their throats. Whenever one of the adult Blackbirds attempted to enter the nest with food, it was viciously driven off by one or both of the Flycatchers.

This behaviour continued until the young Blackbirds were fledged, when the adult Blackbirds took full control of their offspring, the Flycatchers completely disappearing.

JOHN SOUTHERN.

Double nest of Reed-Warbler.—On July 1st, 1951, an almost completed nest of a Reed-Warbler (*Acrocephalus scirpaceus*) was found at the edge of a pond in Portsmouth. When next visited on July 19th the original nest contained two eggs but another nest had been built onto and into the side of the first, the two nests being woven tightly together to form a double nest. The second nest contained three eggs. No further eggs were laid in the first, but on the following day the second contained four, all of which hatched.

D. F. BILLETT.

[Mr. P. E. Brown has commented on this incident as follows: "This behaviour in Reed-Warblers is not uncommon and is often due to interference by neighbouring birds. It is possible that a

rival male may have disturbed the breeding cycle of this pair during the laying of the first clutch, and after a few days the hen began building a new nest alongside the previous one. A more common type of occurrence, however, would be one in which the clutch was completed in the first nest and some of the eggs disappeared, causing the hen to desert and to start building a new nest. We found several parallel instances in the course of our study of the species, though we have only one case where the repeat nest was absolutely adjacent to the first one."—EDS.]

Sub-song of Mistle-Thrush.—On December 16th, 1951, at St. Leonards-on-Sea, I heard the sub-song of a Mistle-Thrush (*Turdus viscivorus*). This was unfamiliar to me, and *The Handbook's* few and rather conflicting notes suggest that it is perhaps not often heard. The bird had been uttering full song, and the sub-song followed after a brief interval from the same tree (and, I think, the same perch). It continued, with momentary pauses, for something like half a minute, and ended with a brief return to full song. It was a warbling sound that did not remind me of any other bird's song (though, when I subsequently saw *The Handbook's* reference to a Garden-Warbler (*Sylvia borin*) I could see some point in the comparison). It bore no resemblance to the bird's true song, except that it was confined within the same rather narrow limits of pitch. It was loud for a sub-song, and, though I was close to the bird, I think it must have been audible at same distance. A. A. WRIGHT.

Blackbird using a Song-Thrush's nest of the same season.—On April 27th, 1951, a Song-Thrush (*Turdus ericetorum*) had four eggs in a nest in a holly hedge at Sway, Hants. They had disappeared by the 30th. On May 7th a Blackbird (*Turdus merula*) was sitting on three eggs in the same nest. On May 9th these too disappeared. EDWIN COHEN.

Nocturnal movements of Redwings.—On the night of October 18th-19th, 1947, at Burnley, Lancs., I made observations on the activities of Redwings (*Turdus musicus*), counting individual calls with a view to determining the intensity of passage.

Meteorological conditions remained unchanged throughout the night: fair, slightly foggy, overcast; wind SE, force I. Sunset Oct. 18th, 17.04 hrs., sunrise Oct. 19th, 06.28 hrs. G.M.T.

I made three series of observations: (i) 19.00-23.00 hrs., (ii) 03.00-03.30 hrs., (iii) 06.00-07.00 hrs. G.M.T.

During the first watch, passage was intense, calls per half-hour numbering 25, 41, 35, 65, 46, 31, 35 and 42. The slight peak in the 20.30-21.30 hrs. period may be significant.

By contrast, between 03.00 and 03.30 only 1 call was heard, and it was clear that passage had virtually ceased.

Counts at 06.00-06.30 showed a revival, 32 calls being heard, but between 06.30 and seven o'clock movement was evidently slackening again, for I only noted 8 calls. The birds themselves were visible during this last half-hour—4 flocks, 2 heading S, 2 SSW, with about 20 birds in each. The fact that so few calls were heard from these suggests that the number of Redwings which cry out whilst within the listener's earshot may bear small relation to the numbers actually passing. I have since confirmed this suspicion by some observations on visible flocks at dusk, finding that only one or two "secips" are usually heard from each lot as they go by.

I had hoped to do further work along similar lines to the above, but circumstances have been against me in this. I submit these data now because they afford good confirmation of recently-published material by other ornithologists, namely Siivonen, quoted in Palmgren's *On the diurnal rhythm of activity and rest in birds* (*Ibis*, 1949, pp. 561-576), and Darlington in *The Nocturnal Movements of Redwings*—a summary of a very successful co-operative enquiry by the Association of School Natural History Societies—published in the Association's *Journal*, No. 4, 1951, pp. 11-13. Graphs given in each of these show intense passage after dark reaching a peak and then rapidly declining, with little movement in the early hours of the morning. Probably renewal of activity shortly before dawn is indicated in Darlington's paper.

K. G. SPENCER.

Three Robins feeding one brood.—In May, 1951, two Robins (*Erithacus rubecula*) built a nest in some rough grass in a garden in Heswall, Cheshire. After the nest was completed a third Robin which had one leg crippled was seen in the vicinity of the nest. Five eggs were laid and hatched. The two normal birds were seen feeding the nestlings, and one of these birds was seen feeding the other, showing that they were mated. The crippled Robin was also seen feeding the nestlings regularly. These three Robins were seen together and no attempt at fighting or display was observed. On one occasion the crippled bird did sing when one of the other Robins was near, but it did not sing hard. The nestlings were found dead, all within two or three days of each other, and all close to the nest, after some cold and rainy weather. The cripple was not seen after the nestlings died. The two normal birds built another nest near by and raised a second brood successfully.

Not only is the tolerance of a third bird by a pair of Robins most unusual, but Dr. Lack informs me that, to the best of his knowledge, this record of three Robins feeding one brood is unique. Haphazard feeding of *fledglings* of another brood may certainly occur (see *The Life of the Robin*, 1st ed., p. 89), but that is very different from the regular feeding observed in this case.

J. M. D. HARRISON.

Black-bellied Dippers in the British Isles, 1950-51.—We have received records from a number of observers showing that there was a small-scale invasion of Dippers (*Cinclus cinclus*) in the autumn of 1950, many of them being satisfactorily identified as the Black-bellied, Continental, race, *Cinclus c. cinclus*. The majority were seen in the eastern counties. They were first seen in November, 1950, but it is possible, as Mr. A. E. Vine suggests, that they came in with the great rush of migrants on October 21st and 22nd (*cf. antea*, vol. xlv, p. 247). It is impossible to say how many individuals were involved, but a few remained into the spring of 1951, when others occurred in Shetland and at Fair Isle. Mr. R. S. R. Fitter and Miss J. M. Ferrier who watched the bird at Aylsham, state that its black belly was very distinct, Mr. Fitter remarking that the black was much more intense than is indicated in the illustration in *The Handbook*.

Records received include:—

NORFOLK.—One, Hellesdon Mill, near Norwich, November 11th and 12th (M. J. Seago, Dr. P. R. Westall); one in November at Cringleford (R. Gage *per* R. G. Pettitt); single birds, race uncertain, Colney and Markshall (J. Cadbury); one Taverham, November–January (Capt. Lloyd *per* R. G. Pettitt); one, Aylsham, December 31st, 1950–February 27th, 1951 (Miss J. M. Ferrier, R. S. R. Fitter); one, Thetford, mid-February, 1951 (*per* A. E. Vine).

SUFFOLK.—One, Euston, for a few days early March, 1951 (*per* A. E. Vine).

ESSEX.—One, R. Colne, Fordstreet, Chappel, Colchester, November 10th, 1950 (A. E. Vine).

FAIR ISLE.—One, between April 28th and May 6th, 1951—also one in March, 1950, and one in November–December, 1951 (K. Williamson. *Scot. Nat.* vol. 64, pp. 55–56).

SHETLAND.—One, Spiggie in Dunrossness, January 4th, 1951 (Tom Henderson *per Scot. Nat.* vol. 64, p. 56).

Gannets mating at sea.—As no definite reference can be found to Gannets (*Sula bassana*) copulating whilst on the sea, it was thought that the following observation might be of interest.

On July 3rd, 1951, the small gannetry at Bempton, Yorkshire, was being watched. An adult Gannet was seen to leave the nesting ledge where it had been quietly resting, and plane with outstretched wings in a direct line which gradually descended to the sea. It alighted less than 10 yards from a second bird which was already swimming on the sea. The two birds immediately approached each other and began displaying. Although some half to three-quarters of a mile out to sea they were clearly seen through a $\times 25$ telescope to “scissor” their bills continuously for about $1\frac{1}{2}$ minutes, the wings being gradually raised as is usual. The bird which had previously been on the cliff ledge then mounted, and coition took place, apparently successfully judging by the time taken.

Incidental to the above it was interesting to note that on leaving the nesting ledge this bird flew with its feet resting on top of the tail, a position previously noted at Bempton and reported, *antea*, vol. xliii, p. 227.

A. J. WALLIS.

Feral pigeons eating frost.—In London, and doubtless elsewhere, feral domestic pigeons (*Columba livia*) habitually peck and (presumably) swallow the frost particles from the grass of lawns when these are white with hoar-frost. This habit is also usual with domestic pigeons at liberty. I noticed in former years that my tame pigeons—of many different breeds—behaved in this manner. So far as I remember they did so only after the sun was well-out, but confined their pecking to those grass blades on which the frost was still white. On December 2nd, 1951, K. E. L. Simmons and I watched several Sheathbills (*Chionis alba*) in the London Zoo, pecking frost from the grass in a similar manner. I am at a loss to account for this behaviour. From the point of view of biological utility it would seem at best a slow and inefficient way of ingesting water. Possibly some pleasurable feeling may accompany the eating of the icy particles, but hardly sufficient one would think to weigh against the rival claims of food-seeking, sun-bathing and other activities, especially in the case of hungry London pigeons. Is it possible that the frost-particles supply a "sign-stimulus" that suggests some natural food and that the birds eat it "in mistake"? DEREK GOODWIN.

Dunlin and other waders "coughing".—While watching about 47 adult Dunlin (*Calidris alpina*) on the Suffolk coast on July 11th, 1949, I heard an unusual sound, "fluk-fluk-fluk-fluk- . . ." repeated three or four times a second, which seemed rather like that which would be made by the flapping of a wing at close quarters. It came from a Dunlin which appeared to be coughing or sneezing. The bird stood stiffly with bill open and, at each utterance, the body jerked rigidly about the tarsal-joint. The "attack" came in bouts lasting up to eight seconds and four bouts were spread over 1-1½ minutes, after which the bird fed normally. The sound was well audible at 60 yards.

On July 21st, 1949, again on the Suffolk coast about 15 miles further north, I witnessed a very similar performance. This time the Dunlin was alone and again I recorded four bouts of "coughing", each lasting about three seconds, and noted "bill slightly open, tail jerked". P. W. P. BROWNE.

On August 6th, 1950, I was watching waders on the Nottingham sewage farm when I heard a strange noise, a sharp, clear, clicking note repeated very rapidly in short bursts. I traced the sound to a flock of Dunlin about 30 yards away and observed that it was being emitted by a Dunlin. The bird was standing with neck stretched, gaping and snapping its bill with great rapidity. I did not form the impression that this was a display of any form, there appeared to be nothing in the bill or mouth but the throat was sometimes convulsed as if to swallow a large object or in endeavour to regurgitate.

Subsequent to this observation I have several times seen similar behaviour, twice by Dunlin, once by Wood-Sandpiper (*Tringa glareola*) and once by Curlew-Sandpiper (*Calidris testacea*). On these occasions the bird concerned stood still and erect with the neck stretched to its full extent; the head was thrown forward and the bill gaped, and at the same time a sound resembling a harsh cough was heard. R. J. H. RAINES.

[Mr. Guy B. Farrar, who has spent much time among waders on the Dee Estuary, informs us that he has never heard a Dublin make such a sound.—EDS.]

Winter feeding behaviour of Common Sandpiper.—A wintering Common Sandpiper (*Actitis hypoleucos*) was present at Cheddar Reservoir, Somerset from early October, 1950, to late March, 1951. During this long period, besides the normal ways, two unusual methods of obtaining food were used: (1) Sometimes, on the colder days, the bird was discovered actively searching for food amongst the long grass which grew on the steep reservoir embankment and when flushed appeared reluctant to fly back to the water's edge. (2) When milder conditions prevailed however, the writer watched the sandpiper on many occasions carefully probing soft sheep's manure, then extracting earthworms of some considerable size, which were swallowed with surprising rapidity. Indeed it was estimated that many of the worms were at least half mature size. In recent years Common Sandpipers have occasionally appeared on the North Somerset reservoirs in winter, but no such methods of obtaining food as described above have been witnessed. BERNARD KING.

Gull-billed Terns in Sussex.—On June 26th, 1952, I saw six Gull-billed Terns (*Gelochelidon nilotica*) at Langney Point, Sussex. Four of these birds first appeared from a westerly direction at about 11.30 a.m. (B.S.T.), flying quite slowly and feeding from the surface. They left in an easterly direction but soon afterwards came back and passed westwards again. They continued flying backwards and forwards along the coast in this manner so that when I left, about an hour and a half after first seeing the birds, I had seen them ten times. On the last two occasions six birds were present. The tide was coming in and each time these terns passed they came nearer inshore. At first they went by 50 to 100 yards out at sea but towards the end they were flying not far from the water's edge and splendid views in good light were obtained. In the afternoon I found that all six birds were still present but were passing at longer intervals and further out, this perhaps being due to the fact that the tide was then falling.

These birds were similar in appearance to those which I saw in the same locality in 1951. Superficially they resembled Sandwich Terns (*Sterna sandvicensis*) in size and colour but they

differed from that species in the following particulars; build distinctly heavier and general appearance more solid; tail less forked; bill noticeably shorter and stouter and completely black; flight slower and heavier; call "karr-yak", less rasping than that of a Sandwich Tern and quite distinct. The whole time that I watched these birds they always took food from the surface without diving. Two of them had a few white feathers on the forehead and in these birds the ends of the outer primaries were darker than in the others. It may be worth mentioning that over night the wind, which had been westerly for some days had swung round to the east.

On July 4th, 1952, I saw, at the same place, a single Gull-billed Tern which was flying along the water's edge against a strong easterly wind. This bird did not call or feed but otherwise the distinctive features mentioned above were well, though briefly, seen. D. D. HARBER.

Lesser Black-backed Gull breeding in Kent.—Mr. G. E. Took reports that on May 30th, 1950, he found two nests of the Lesser Black-backed Gull (*Larus fuscus*) on cliffs near Dover. The species has often attempted to nest at Dungeness, but has not been reported to breed elsewhere in the country.

Request for information.—Mr. and Mrs. L. S. V. Venables of Scousburgh, Shetlands, who are preparing a book on the birds and mammals of the islands, are anxious to prove or disprove a rumour that an ornithologist, visiting Unst in 1950, saw a female Shoveler (*Spatula clypeata*) with chicks on the Loch of Cliff. If confirmed, this would be the first breeding record for Shetland. They would be very grateful for any information that might help to clear up this point.

SUPPLEMENTARY NOTES

(Continued from page 77)

Wheatear (*Enanthe œnanthe*).

GENERAL HABITS.—Seen to run "quickly and easily" (M. Corbould). Seen hovering "for a few seconds, 1-2 feet above the ground," presumably for feeding purposes (J. D. R. Vernon), *cf. antea*, vol. xxxvi, p. 94 and *Scot. Nat.*, vol. 61, p. 26. [Hovering is quite frequent in Dungeness area.—I.J.F.-L.].

FOOD.—Seen taking grain from horse droppings on a track crossing Epsom Downs (Howard Bentham).

Greenland Wheatear (*Enanthe æ. leucorrhoa*).

GENERAL HABITS.—Female seen hovering at 1½ to 10 feet above ground, evidently feeding (D. J. Low, E. Huyton).

Nightingale (*Luscinia megarhyncha*).

VOICE.—Fledgling heard to make a loud, harsh, vibrating "crrrrkkh" (W. G. Teagle).

DISPLAY.—A further case of "injury feigning" by female from nest recorded by H. E. Woods.

Red-spotted Bluethroat (*Luscinia s. svecica*).

DISPLAY.—Threat display similar to that of Robin seen in Swedish Lapland, June 16th, 1951. Birds displayed at one another with tails cocked acutely, heads thrown back and breasts puffed out; one displayed at observer "showing off its striking breast pattern and orange gape." (P. H. Gamble).

Robin (*Erithacus rubecula*).

GENERAL HABITS.—"Dew-bathing" seen September 4th, 1949 (John Denny).

VOICE.—A call closely resembling "hweet" of Redstart heard near Worthing, Sussex, Sept. 9th, 1950 (John Shepperd).

FOOD.—Seen feeding on berries of ivy, Feb. 26th and Apr. 18th, 1951, Frittenden, Kent (Derick Summers); and berries of *Cotoneaster horizontalis*, Nov. 28th, 1951, Limpsfield, Surrey (K. R. Chandler). Juvenile seen to eject pellet consisting of 8 blackberry seeds and other unidentifiable matter, Sept. 2nd, 1950, Derwent Water, Cumberland (Miss W. Hart).

Hedge-Sparrow (*Prunella modularis*).

VOICE.—Sub-song used in conjunction with normal song "in a continuous run of 15 minutes," Mar. 4th, 1950 (G. E. Took).

Dipper (*Cinclus cinclus*).

GENERAL HABITS.—Seen making fly-catching flights from rocks in mid-stream, June 9th, 1951, Lynmouth, Devon (B. L. Sage).

Swallow (*Hirundo rustica*).

GENERAL HABITS.—Further records (*cf. antea*, vol. xlv, pp. 132-133) of perching in trees with foliage have been received from K. R. Chandler, E. Huyton and D. J. Low, P. Moxon, G. N. Slyfield and A. N. Sykes; these records confirm previous conclusions. M. Jan Huble reports that in Belgium perching in fruit trees is quite common and he has a record of birds perching in an apple tree in full blossom. R. E. Sharland records *c.* 30 resting high up in the branches of a mangrove tree in S. E. Nigeria, Nov. 20th, 1950.

House-Martin (*Delichon urbica*).

BREEDING.—Piece of glazed china found in outer part of mud wall of nest at Durley, Hants. (Dr. C. Suffern).

Sand-Martin (*Riparia riparia*).

GENERAL HABITS.—D. J. May records that a migrating party at Ain Sukhna on the Gulf of Suez flew within inches of the heads of observers and on the following day could actually be picked up by approaching them quietly on hands and knees.

DISPLAY & POSTURING.—Sexual chase observed at Fayid, Egypt, March 30th, 1950, in which male would pursue female in rapid, twisting flight and would then alight, the female alighting ahead of it. Male would then sometimes lie inert, sometimes advance towards female "in a slow run", on one occasion mounting her briefly (K. E. L. Simmons).

Swift (*Apus apus*).

VOICE.—Bird on passage over Walsall, Staffs., on August 31st, 1951, was heard to utter a loud single scream (*cf. Handbook*, vol. ii, p. 245). (David Jenkins).

Hoopoe (*Upupa epops*).

FOOD.—Seen to kill and eat a lizard about two inches long at Fayid, Egypt, August 12th, 1949 (K. E. L. Simmons).

Green Woodpecker (*Picus viridis*).

VOICE.—Food call of fledged young bird, "a soft clucking note", heard at Porlock, Som., July 9th, 1949 (the late E. W. Hendy).

DISPLAY & POSTURING.—On February 26th, 1950, at Blagdon, Som., two birds seen facing one another, first on bough of oak tree and then on ground, on several occasions coming so close as to touch bills, when rhythmic side to side movement of head followed (*cf. antea*, vol. xl, p. 87); this display was

accompanied by a high-pitched calling described by E. Cohen (*antea*, vol. xxxix, p. 248) as "like the rubbing of a window pane with damp chamois leather" (Bernard King).

FOOD.—Seen feeding from horse droppings in road in Hants., January, 1949 (H. E. Woods); seen taking elderberries (*cf. ante*a, vol. xlii, p. 218), October 12th, 1946, Bury St. Edmunds, Suffolk (D. V. Butt).

Great Spotted Woodpecker (*Dryobates major*).

FOOD.—Male caught taking peas, July 15th, 1949, at Slough, Bucks. (G. R. Mountfort); seen breaking off oak-apples (galls of *Biorhiza pallida*) and opening them by wedging in cleft in tree, near Dundee, in winter months (Henry Boase); similar behaviour with marble galls recorded in London, February 18th, 1949 (C. J. O. Harrison).

Lesser Spotted Woodpecker (*Dryobates minor*).

GENERAL HABITS.—Bird watched near Hutton, Som., March 24th, 1950, "worked both up and down trunks of young trees, but mostly downwards, sometimes for several feet at a time" (W. L. Roseveare).

BREEDING.—Mr. Thomas Thomas has sent records of observations at a nest at Tenterden, Kent, in 1950: during a total of 28 hours watching from May 28th to June 4th, the male brought food for the young on 83 occasions, the female on 30 occasions. Observations over 2½ hours at a nest at Kingswood, Surrey, in 1950, also showed an excess of visits by male over those of female (M. Waddicor).

REVIEWS.

The Popular Handbook of British Birds. Edited by P. A. D. Hollom. (Witherby, London, 1952). xxiii + 424 pp., 132 plates. 45s.

The Practical Handbook of British Birds, in two volumes (1919–24), at once became the standard text-book on the subject, and so remained until it was superseded by the more ample edition called *The Handbook of British Birds*, in five volumes (1938–41), by Witherby, Jourdain, Ticehurst and Tucker. Now comes *The Popular Handbook of British Birds*, in a single volume, not as a replacement but as something complementary. For the serious ornithologist the larger work remains indispensable, but the new volume will be highly convenient to have at hand for quick reference and to take away from home; it will also be valuable for checking points on which more up-to-date knowledge is now available. For the less aspiring bird-watcher the new work by itself will give the information he requires, with a weight of authority behind it.

Philip Hollom, the editor, is to be warmly congratulated on his success in a task which had been planned in outline by Witherby and Tucker, and later more fully by Tucker and himself. The publishers, H. F. & G. Witherby, Ltd., are likewise to be commended for an admirable production, which includes the majority of the coloured figures of the larger work, conveniently arranged three on a plate, and additional colour plates of eggs. (Apart from figures of very rare species, one notes such an omission as that of the figure showing the mature and nestling plumages of the Gannet.)

The compression has been achieved in two ways. Firstly, all species that have been recorded less than ten or a dozen times in the British Isles are excluded altogether; and information relating to the reproduction of species which have not bred in our area is likewise omitted. This is an example that might well be followed even by larger works, subject to the inclusion of brief and unillustrated accounts of the extreme rarities—and perhaps at least a list of these might have been given in this book, especially as several of them happen to be included in the figures of related species.

Secondly, the information about each species is condensed, by the omission or reduction of information not likely to be required by the field observer.

In particular, the detailed descriptions of plumage have gone and the emphasis is all on field characters of form and habit. Distribution abroad is given in adequate summary form. The treatment, moreover, is by species, not by races separately; this departure from the principle of the parent work will certainly be satisfactory to the field observer, for whose purposes the mention of the races in the text will be sufficient.

One welcomes the adoption of the Wetmore order of classification, now generally followed throughout the world although as yet relatively unfamiliar to British readers. In this respect and also in details of nomenclature the book will be found to be for the most part in line with the new B.O.U. List now in the press; the very few differences in scientific names relate to controversial points (e.g. specific separation of Bean- and Pink-footed Goose), and the editor is not one of those who insists on preserving original mis-spellings. The authors of the names are not given. The English names are those for species, with a compromise in a few cases (e.g. Pied/White Wagtail) where readily distinguishable races have different names in popular use. There are a few minor discrepancies, possibly confusing to the unlearned reader, between the English names in the present text and those under the figures from the parent work (e.g. American Pectoral Sandpiper).

This was certain to be an important book. It may be acclaimed as soundly planned for its purpose and accomplished in a manner highly creditable to British ornithology.

A. LANDSBOROUGH THOMSON.

British Waders in their Haunts. By S. Bayliss-Smith. (Bell, London, 1951). 21s.

Bird photography has today become for many a field sport, and in no branch is this aspect more apparent than in the photography of birds away from the nest. In his attitude and enthusiasm for the waders Mr. Bayliss-Smith writes very much as the deer-stalker might write of his quarry or the Test fisherman of his trout, for he finds his chief delight in "bagging his trophies" on the estuaries and mudflats of the coast. This type of photography was pioneered in this country by G. B. Farrar, to whom the author pays due tribute, but Mr. Bayliss-Smith and his southern colleagues have concentrated on it to a degree which has resulted in the establishment of what might be called a Sussex 'school' of wader-struck bird photographers. The results may not have the clarity of bird portraiture, but they have great appeal and interest, and not a few are remarkable—for the author has augmented his own collection by some excellent work from Holland.

The book deals lightly with the main groups of waders, including some of the rarer species, and with the author's own experiences, excitements and disappointments in quest of his quarry, and there is one chapter on the technique of this form of photography. In this he could with advantage have been more detailed, for this is a very specialized branch of bird photography, requiring its own equipment. For instance, the standard type of hide used by bird photographers has only limited uses and many disadvantages when applied to the conditions of the shore. The author is also too quick to write off all other types of camera except the reflex. He appears to be blind to the very narrow belt of definition which he obtains with the very long-focus lenses he so vehemently advocates. The truth is that there is no ideal equipment, and there is room for both reflex and stand cameras and for both long- and short-focus lenses in this work. Mr. Bayliss-Smith's methods could, for instance, never have obtained the type of result to be seen in E. J. Hosking's pictures of Knots (*antea*, vol. xlii, plates 54-57). Only a camera with swing-back will produce such results. Nevertheless his illustrations are original and natural, and his enthusiasm is infectious. The book is completed by three pages of black and white diagrammatic drawings of waders in flight by Basil Laker. A number of these show promise, but a few are rather wooden and hardly convey the "jizz" of the bird, especially in the angle and shape of the head, and in others the white wing bar is too exaggerated.

G. K. Y.

Menaboni's Birds. By Athos and Sara Menaboni. (Michael Joseph, 84s.)

Athos Menaboni, who was born in Italy in 1895 and emigrated to America after the first World War, is described by his publishers as having produced in this sumptuous volume "the most beautiful, most faithful bird portraits published in America in more than one hundred years." While his pictures have considerable charm they are highly stylised and romanticised and, often appear to aim rather at striking decorative effects than at faithfulness to nature. It is perhaps in his skilful and thorough treatment of details of plumage and of the soft parts that the artist shows up best. His backgrounds are excessively pretty and the shapes and attitudes of his birds tend either to be wooden and lumpy in repose or artificial and forced in movement. For example, in his plate of a Crow pursued by a Kingbird, the Crow appears immaculate, grey and almost dovelike, despite the pecked-out feathers which float unconvincingly behind him, while the pair of Cardinals exhibit an ethereal quality difficult to associate with that heavy and stolid bird. The text by the artist's wife is from the ornithologist's standpoint a total loss, consisting of well over a hundred pages of artless patter which it would be unkind to criticise seriously, although there is an irresistible temptation to quote the closing words of Chapter Five; "Will there be goslings next nesting season? Is this the proper gander?"

The quality of the paper and of the coloured reproductions printed in the United States is of a standard which it is distressingly difficult to match in this country at the present time, and the three years which the publishers state they have spent in doing justice to the originals have certainly been used to good purpose, since the results will give much pleasure to bird-lovers.

E.M.N.

BOOKS RECEIVED.

King Solomon's Ring. By K. Z. Lorenz. (Methuen, 15s.).

Fleas, Flukes and Cuckoos. By Miriam Rothschild and Theresa Clay. (Collins, New Naturalist, 21s.).

Birds of the Channel Islands. By Roderick Dobson. (Staples Press, 30s.).

The Origin and History of British Fauna. By B. P. Beirne. (Methuen).

The Lake and the Woods. By Mikhail Prishvin. (Routledge & Kegan Paul, 21s.).

The Pocket Guide to British Birds. By R. S. R. Fitter and R. A. Richardson. (Collins, 21s.).

Bird Migrants. By Eric Simms. (Cleaver-Hume Press, 15s.).

The Fulmar. By James Fisher. (Collins, New Naturalist Monograph, 35s.).

Lucy Cuckoo. By Mary Coventry. (Faber & Faber, 6s. 6d.).

[We regret the delay in reviewing some of the above books, and this will be remedied in an early number.—Eds.]

LETTER.

UNUSUAL ACCUMULATION OF NESTING MATERIAL BY STARLINGS.

To the Editors of BRITISH BIRDS.

SIRs,—The recent notes on this subject (*antea*, vol. xlii, p. 119; xliii, p. 335; xliv, p. 71) give the impression that this behaviour is unusual, but my observations prove otherwise. Five or six pairs of Starlings (*Sturnus vulgaris*) breed every year in the loft and holes in the eaves of our house at South Nutfield, Surrey. At two of these sites Starlings have accumulated nesting material to heights of three to four feet for at least the last three years. Nesting material was accumulated to a smaller extent at a third site in 1951. Straw was used as nesting material in all cases.

There is a high probability that this habit has been overlooked owing to the fact that the majority of Starlings' nesting sites in buildings are inaccessible, but it is similar to that of the Jackdaw (*Corvus monedula*). R. W. CROWE.

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BRITISH BIRDS

NUMBER II, VOL. XLV, NOVEMBER, 1952.

MALLARD COUNTS IN THE TAY ESTUARY AND IN ANGUS.

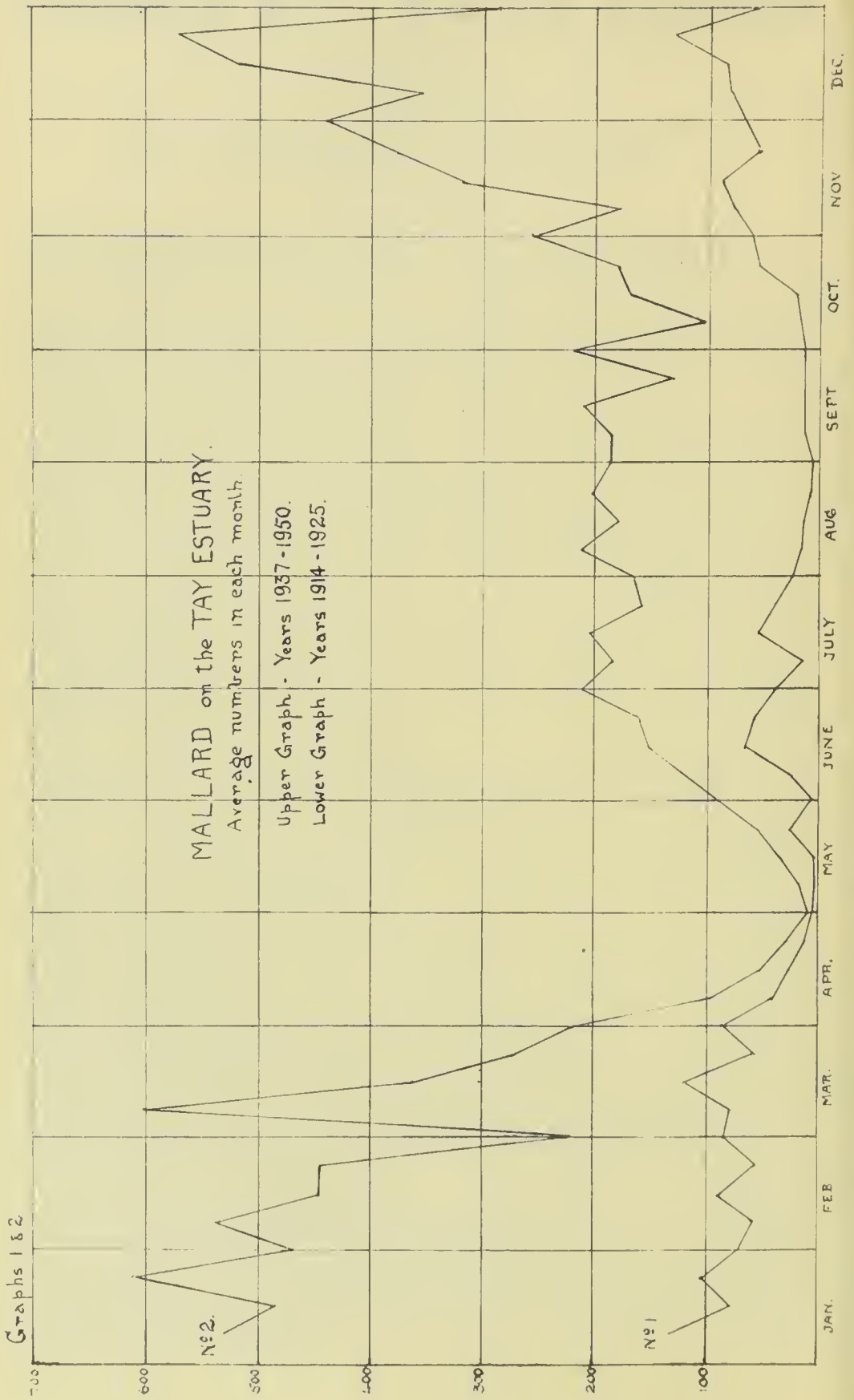
BY
HENRY BOASE.

Over a period of nearly forty years, the writer has kept record of the number of Mallard (*Anas platyrhynchos*) on and around the Tay Estuary. On the estuary, the counts refer to duck found in an area extending westwards from the Tay Bridge to a point beyond Kingoodie Bay, approximately MR796450 (796-894) 894515. These records are not quite continuous, for in a period of some ten years between 1926 and 1935 relatively little attention could be given to the work. It was obvious from the data that a substantial change in numbers has come about with the passage of years and this seemed worth examining in detail. Two periods have been taken, from 1914 to 1925, and from 1937 to 1950, for which fairly regular counts are available, and these form the basis of the enquiry.

From the notes available, the average numbers seen in each seven/eight-day period (four periods per month) over the years have been plotted in two graphs, Nos. 1 and 2. No adjustment of these straight averages has been made and the figures obtained were plotted on squared paper, using four divisions per month, the plots being inserted in the appropriate division in each month. The earlier period covers twelve years, the later period fourteen years so the averages should not be seriously affected by the varying tide and weather. Most of the counts were taken in the forenoon, mainly from the same points and with the same binocular.

The two graphs show some marked differences, yet the general trend in each case is the same. The great increase in average numbers in the later period is the main point at this stage, and some actual counts in the two periods are of interest. In the first period 1914/1925, the highest count of 400 occurred twice—in January, 1914, and December, 1923. A count of 300 was got in December, 1916, and counts of 200/300 on five occasions, twice in January, twice in March, and once in November. In the later period 1937/1950, the highest estimate was 2,000 in March, 1947; a count of 1,800 was taken in December, 1945, and nine counts of 1,000 or more have been recorded, two of these in November, the others in January/March. All these high counts were got in the years 1944/1950: prior to that, the highest counts were 1,000 in December, 1943, 600 in January, 1941, 500 in August, 1943, and seven other counts exceeding 300.

These figures, and the graphs of average numbers, give an indication of the build-up in recent years. It is important to note that



the increase covers both summer and winter numbers. The summer average is up by about three times; the winter average has risen by about four and a half times. These matters are made clear in Graphs 3 and 4 which show the maximum numbers found in the period June/July/first week of August in the years 1918/1925 (Graph 3) and 1937/1950 (Graph 4). The maximum winter counts in the period December-January-February are shown for the years 1915/1925 and 1937/1950 in Graphs 5 and 6. In the winter graphs, the years stated refer to the counts of January-February, as only one or two December counts exceeded these of the months following.

Coming to a more detailed consideration of these graphs, it is surprising to find so much general agreement in outline of Graphs 1 and 2. This does suggest that these outlines represent something real and not accidental. In spring, the marked increase in early March occurs at a time when the dispersal to actual breeding places has already begun. There must be arrival on quite a large scale to raise the numbers so definitely, yet, according to *The Handbook*, passage does not begin until mid-March, and the main peak as shown is in the first week. The rapid fall does show a change in rate at the end of March, and a lingering remnant which might be due to the presence of passage birds right on to the end of April.

The rise in numbers early in May marks the return of the males to tidal water. The outline in Graph 1 at this time is broken, due almost certainly to the writer's repeated absence from the district in early June during these years. The general outline does agree reasonably with the later series up to mid-July. The drop in numbers from mid-July in the earlier series contrasts with the relatively equal numbers maintained until mid-September in the later records.

It is important to remember that the summer counts consist of about 95% males and 5% females and so represent winter numbers of somewhat less than double. It would appear, therefore, that in the earlier period, the average numbers in summer and winter were similar so far as Mallard using tidal water are concerned. In the later series, the average winter count is found to be substantially larger than the summer count, as shown by the number of males present on the Tay Estuary.

Sometime in the period from mid-May to early September, the Mallard moults to eclipse plumage, later renews the flight feathers, and finally moults once more to assume the breeding plumage. During the progress of the moult, each individual is flightless for a period of ten to fourteen days. The drop in average numbers shown on Graph 1 from mid-July to mid-August may be due to the need for concealment during the critical flightless period. That this departure is not shown clearly in the corresponding plot for the later period may be the result of the far larger numbers present

masking to some extent the withdrawals. There is a drop of some 10% in average numbers in late July and this may mark the average incidence of withdrawal as masked and blunted by the process of averaging, and by the widely varying date of critical moult from one individual to another.

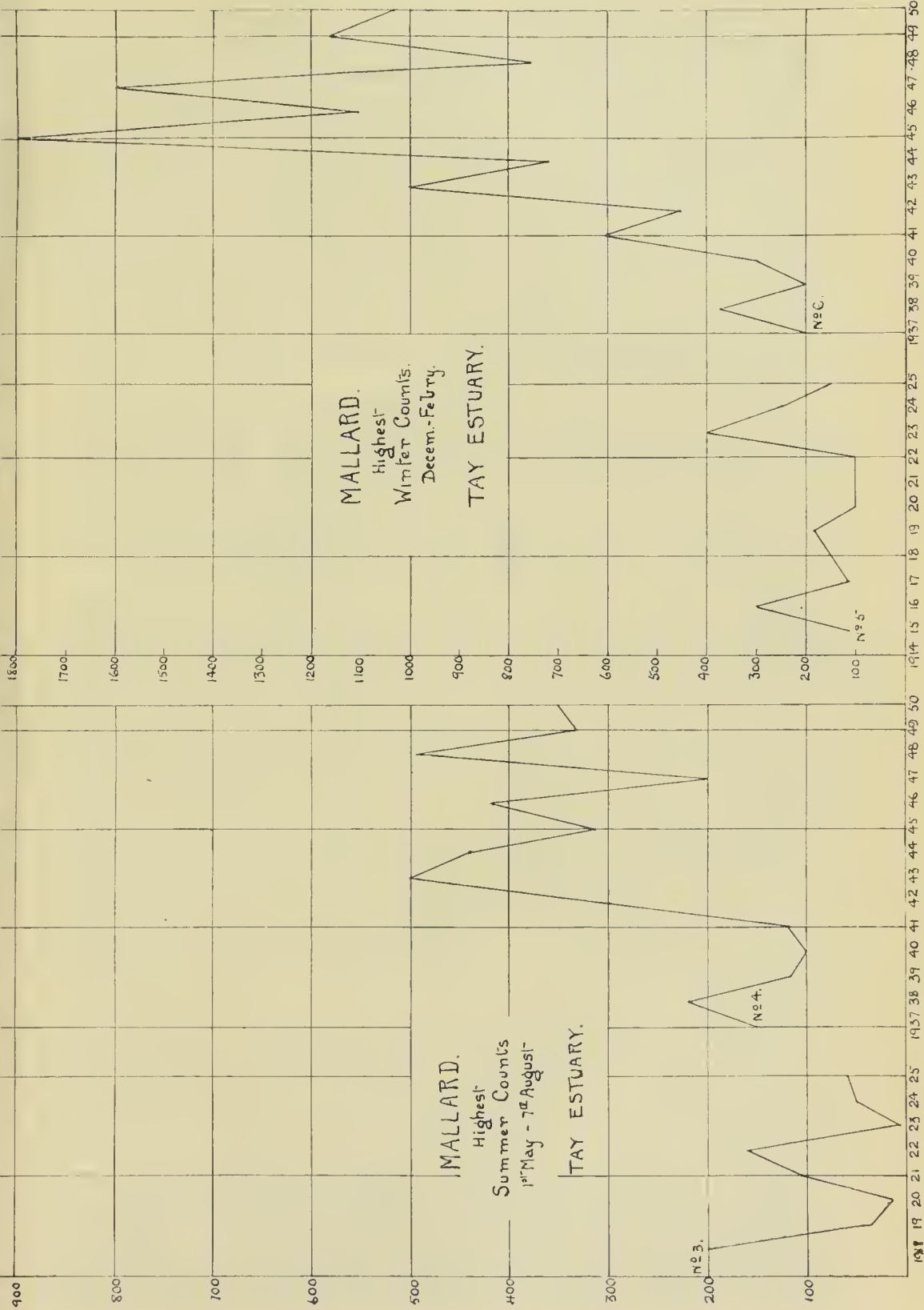
The later portion of the summer period marks the end of the close season, in the years 1914/1925 as from 1st August, and in 1937/1950 as from 1st September. The actual effect of this change is difficult to estimate, but there is no doubt that it has saved the later broods from being wiped out.

In September and early October, there is a period of change. In Graph 1, numbers show a slow increase; in Graph 2, rapid change, tending to a marked reduction, is followed by the first stages of a rapid increase. The cause is obscure: it might be real departure corresponding to the increase in early March. According to *The Handbook*, immigration is expected from mid-September so that the reduction, if correctly represented, must be vigorous enough to retain its identity. Such evidence as is available suggests arrival on the Tay Estuary rather later—the end of October and during November. At this time, the record on tidal water is not confused by the arrival of local loch populations driven off by frost.

The largest winter numbers seem to be reached in December and January, with a definite drop in the interval. This should be real, as the writer has had throughout additional time to make counts in the first days of January, yet the numbers are definitely lower at this time. Probably these two peaks mark stages in the final onslaught of winter, the December increase marking the freezing of the more exposed local marshes and other refuges, that of January the arrival of more northerly birds driven south by the cold and storms usual at this time.

Graphs 3 and 4 showing the highest summer counts, contain some interesting points. Both show marked irregularity, part of which could be due to observational difficulties. On the other hand, there may be some relation to the weather of the previous winter. The Mallard is largely resident, so the local weather can have a definite influence. The weather notes available for the period 1914/1925 are not detailed, but the low figures for 1919 and 1920 may have been the result of the bad spring and early summer of 1918. Again, the spring of 1922 was cold and wet. In the later period 1937/1950, there was exceptional cold in January, 1939, and again in 1940 which may well have been the cause of the low counts in 1939, 1940 and 1941. The drop in numbers in 1947 hardly needs explanation—the early months were exceedingly severe.

The winter counts shown in Graphs 5 and 6 show vividly the change in numbers. In the earlier series, only in 1923 is there any evidence of immigration; the summer counts that year were



low. Some of these winter counts are actually lower than the summer figures, which again suggests that some Mallard are summer visitors. Graph 6 shows the winter counts for the period 1937/1950, during which there was a great increase. The low summer counts in the years 1939/1941 do seem to be reflected in the winter figures, but the winter figures remained low in 1942 and 1943 in spite of more favourable summer numbers, possibly due to a proportion of summer visitors departing in September/October. The figure for 1947 refers to a count taken before the full fury of that fearsome winter was let loose, and its effect appears to be registered in the plot for 1948. In comparing these winter and summer plots, one must keep in mind that these refer to January/February and June/early August counts of the same year, and that the summer counts are at least 90% males.

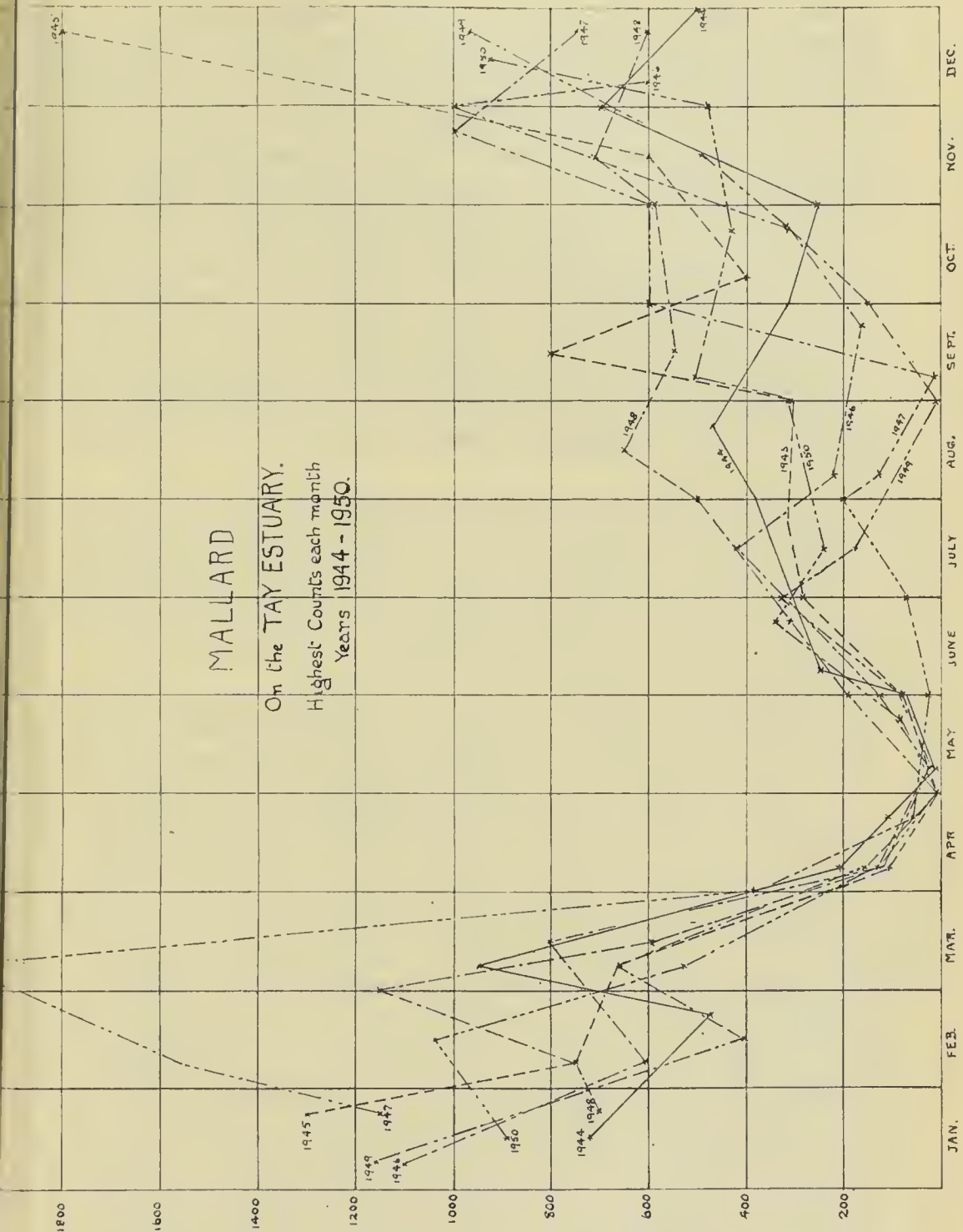
In order to give a more detailed picture of the varying number and behaviour of Mallard on tidal water, a set of superimposed plots covering the years 1944/1950 has been prepared. These are made up by using the highest count found in each month, placed as before in its position in the four divisions of seven/eight days in each month. These plots show the comparatively wide variations from year to year which led to the use of averages in the Graphs 1 and 2.

In the series shown, the peak in January is not noticeable, although quite substantial counts were got, but these are relatively unimportant compared with the repeated high figures for early March. Five out of the seven years show a peak at this time, and three were large. The ensuing rapid fall during March and the low counts to the end of May are all similar, and the rise to the end of July, in six of the plots, is also similar. Thereafter, the form becomes more individual, but all save one show the trend for a drop in numbers during September. The rise in November, and the tendency to peak in December are alike in kind, if not in numbers.

The high count in December, 1945, cannot be accounted for by the freezing of the local lochs—in any case, many Mallard remain on the ice during the day. November and December of that year were mild and stormy. Some Mallard winter on the sea off the Angus coast and it may be that some of these were driven to shelter in the Tay.

The plot for 1947 shows some unusual features. In spite of the very hard weather, the general form of the first three months remained normal. The counts in April, May, June and July were all abnormally low. It appeared that the males did not return in the usual numbers to tidal water during the moult. Very few broods were seen in 1947 and it seems probable that the males remained inland with the females when these failed to nest.

Before discussing further the individual plots in Graph 7, it is as well to mention that the original counts used in this series included Mallard found on a stretch of the Tay Estuary lying to the west of the defined boundary. The additional area lies to the

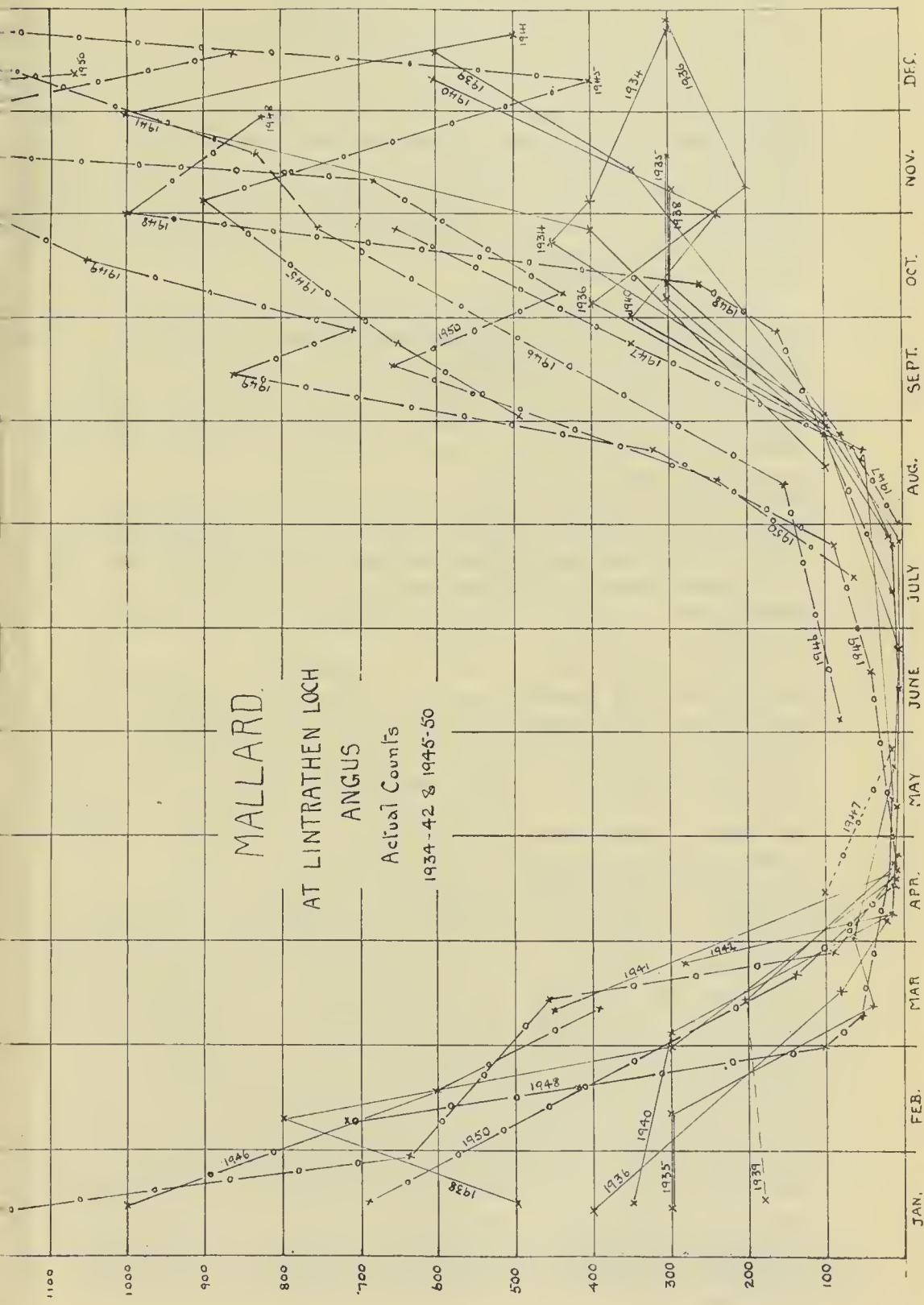


south and east of the Powgavie road-end—MR469795. As the other graphs were all prepared from counts from the original section, the plots for Graph 7 were prepared from data amended accordingly. In so doing, some important points were lost, as it appeared that the summering groups may move up-river and so

create a fictitious scarcity on the usual feeding ground. A comparison of Graph 7 with a plot of the counts for the larger area showed that the main difference is in the period July/September where a less erratic outline was got for the larger area. The plots for 1947 and 1949 showed the greatest divergence. In both these years the main packs appeared to have moved up-river and in August gave record counts—in 1947 touching 900 from mid-August to early September; in 1949, rising in the third week of August to an estimated total of 3,700—an incredible number. It would appear from the figures that in 1947 the males and some females returned to tidal water in August. A count of 900 could not have consisted of the normal 90%—95% of males as that would have implied a marked rise in the local population, nor can it be supposed that the surplus consisted of young birds, as all indications pointed to nesting having been a failure. Unfortunately it was not possible to ascertain the proportion of males and females in the August flocks.

In 1949, a prolonged drought began in the Tay area in early summer and by August, marshes and lesser waters were dried up, driving the duck population to other feeding places. The great assembly found off Powgavie was crowded into a relatively small area of mud-flats, about three quarters of a mile long and about half that in width. This assembly appeared to break up rapidly as the later counts showed little trace of it.

A comparison of these tidal water records with Mallard records from fresh water seemed desirable. Unfortunately, counts on the lochs have been far less continuous and detailed than those for tidal water. However, counts for most months of the year since 1934 were available for Lintrathen Loch MR7778, a reservoir of the Dundee Water Commissioners. This loch lies in the foothills of the Grampians at a height of about 700 feet. Of irregular shape, it has shelter from the more usual directions of high wind. Feeding is somewhat restricted, but the loch lies within easy reach of the farm lands of Strathmore. In the records available, there is a gap from mid-1942 to 1945 when no transport was available. In drawing the plots in the composite Graph 8, those relating to the period 1934/1942 are shown in continuous line, those from 1945 in chain, in order to make more distinct the marked differences found. The counts relating to January and February are not very satisfactory as weather caused repeated gaps in the record. Their relation to the plots for March may, therefore, be distorted. It appears, in a broad way, that there are no marked fluctuations as found on tidal water, and the trend of the plots seems to point to departure before mid-April. The plot for 1948 shows emphatically the effect of the remarkably mild weather of February and March in inducing an early departure to the nesting places. The dotted sections of the curves for 1939 and 1947 cover large gaps in the records.



In the autumn portion of the graphs, there is a marked separation of the two series of plots, both in respect of date and of numbers. The earlier series show a very definite trend for the end of August, but only two later plots, those for 1947 and 1948—both abnormal seasons, follow the older line. The increase in numbers shown in the plots 1945/1950 is very marked, and these are foreshadowed by the counts of 1940 and 1941. Five of the earlier plots show a peak in early October, while the later plots show a greater spread of these increases—from mid-September to early November, and the high winter peaks are likewise scattered throughout late November and December.

Reverting to Graph 2, there is evidence of a fall in numbers on tidal water in September and early October. On Graph 7, this tendency is confused although the trend of most of the plots is downwards with marked distortion of the outlines for 1946, 1949 and 1950. On Graph 8, the plots for 1946, 1949 and 1950 show larger numbers for each of these years in August and early September, suggesting thereby that some at least of the tidal water birds had sought fresh water earlier than usual. Courtship display begins on fresh water in early September, and at that time it seems likely that the males on tidal water depart in search of the females and in this way arises the trend of falling numbers noted in Graph 2. It also overthrows the idea of a summering population mentioned earlier in this paper.

In comparing Graphs 7 and 8, it is interesting to note that on fresh water the lowest count is reached in mid-April, whereas on tidal water the lowest count tends to fall at the end of April. This may be due to some passage birds lingering on tidal water.

The whole series of graphs shows the trends of some complex change in progress. It would be attractive to suggest explanations for some of the changes but a wider survey is needed. There are some local changes which may be having an effect—the change in the length of the close season to 1st September made about 1927, for instance. There have been changes in the shore line at the west end of Dundee which have made Invergowrie Bay more sheltered from tidal scour. A change in a sewer outfall at the east side of the bay may have increased the animal population in the mud. Certainly many more Mallard rest and feed there now. Two other feeding areas further west are also used by greater numbers of duck. It may be that the available feeding is now fully utilized as it is odd to find the November/December counts for recent years as follows—2,128 on November 28th, 1948, 1,704 on December 18th, 1949, 2,136 on December 10th, 1950, and 2,168 on December 2nd, 1951. These counts are for the extended area to Powgavie and the numbers at any one feeding place vary with tide and weather. The winter numbers must include a substantial proportion of immigrants as the recent summer figures suggest a local resident population of about 500 pairs.

THE DESIGN, CONSTRUCTION AND OPERATION OF HELIGOLAND TRAPS.

BY

H. G. BROWNLOW.

(1) INTRODUCTION.

HELIGOLAND traps have been briefly described by Lockley (1947), Hollom (1950) and in the *New Naturalist* (1948). They were originally developed by Dr. Weigold from the netting traps used to catch thrushes by the Heligoland islanders, and described in Gätke (1895). The objects of this paper are to give fuller details of these traps than have hitherto been published, and to serve as a guide for anyone wishing to build such traps in future.

A cardinal point that should be borne in mind by anyone making or using traps of any kind is that kindness to birds is the first consideration. No damage should be done to birds in any circumstances, and the minimum possible shock and fright should be inflicted on birds trapped.

(2) GENERAL DESCRIPTION.

A Heligoland trap consists of a tapering wire netting enclosure, open at the wide end, and closed at the narrow end by a collecting box with a transparent back, which appears to birds driven into the trap as a way of escape, and induces them to enter the box. Traps are set up over places where birds collect to feed, rest and roost. They are designed to catch larger numbers of birds than are obtained in smaller portable traps. They involve considerable outlay of effort, materials and expense, and are, therefore, only worth erecting at places where information of genuine scientific value may be obtained from the results of trapping. Such places, in general, lie on known migration routes, or at other points where migrants are known to concentrate.

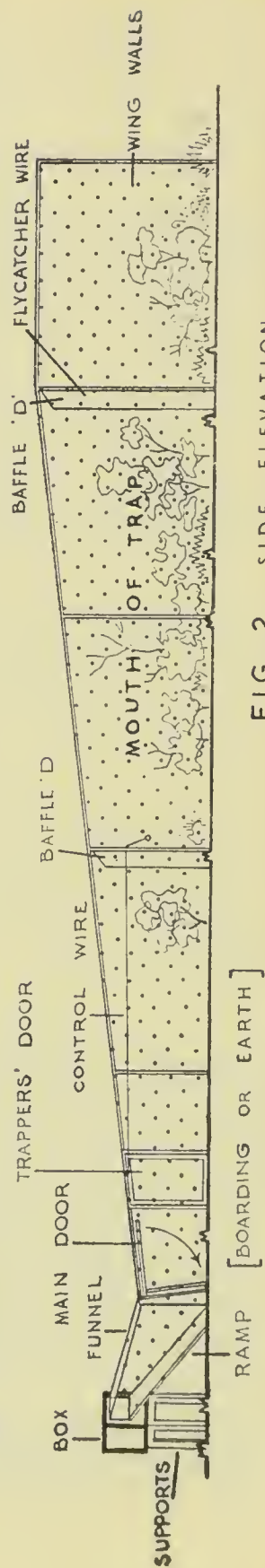
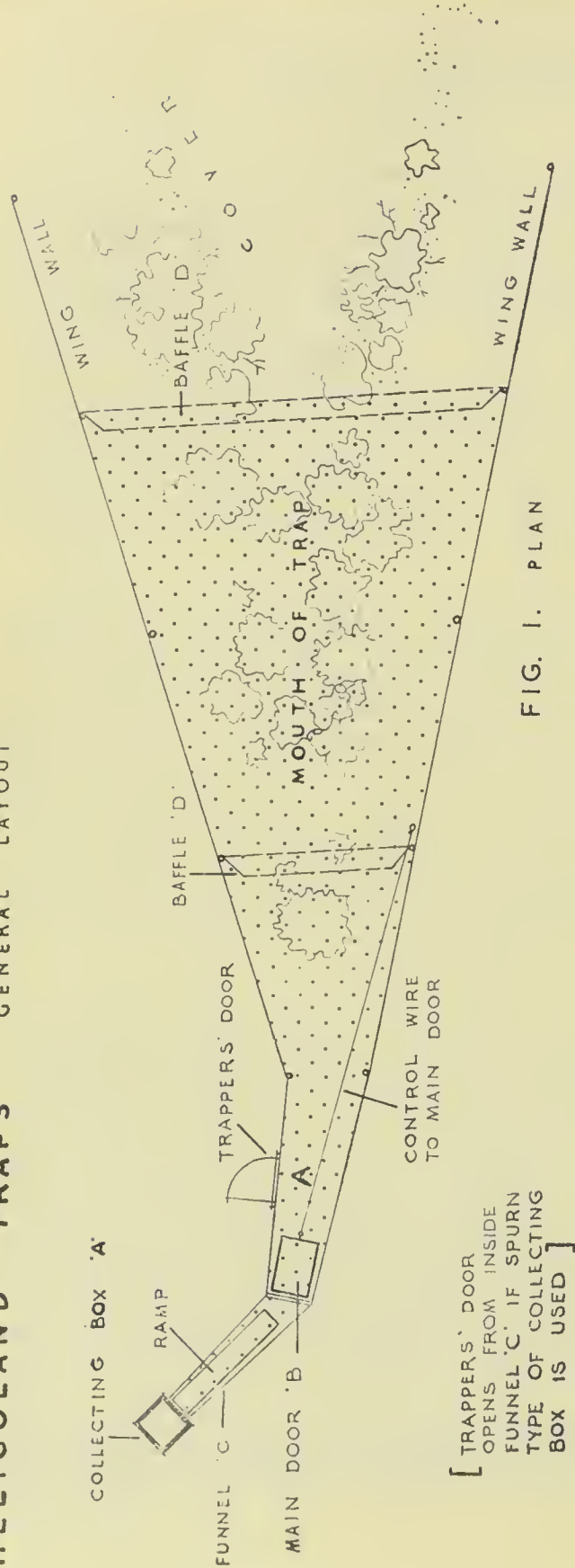
(3) SITING.

A trap is best sited at the end of a fairly large patch of cover. If sited in the middle of cover, there will be a greater tendency for birds to by-pass the trap. The nature of the cover, and the position of the trap relative to it, should be such that birds may easily be driven through it to the trap.

The trap should be protected from wind. A high wind in the cover at the mouth of the trap usually means no birds. The ideal site is thus in a hollow, protected from all winds. If that ideal cannot be obtained, the trap should be protected from the winds prevailing at the migration seasons. Before construction starts, of course, the siting should be confirmed by observation that the selected cover is used by birds in reasonable quantities, and variety of species.

The best cover is bushes with some trees. High trees in the cover immediately in front of the trap are undesirable, because birds perching in them may fly over the trap. Paths should lead through

HELIGOLAND TRAPS GENERAL LAYOUT



the cover towards the trap mouth, and, particularly near and under the trap, there should be no patches of very thick cover from which birds cannot easily be driven. The bushes in the trap mouth should not exceed five feet in height. If they are higher, they necessitate a higher roof to the trap, thus adding expense and to the danger of birds breaking back over the trappers' heads.

If the site allows of choice of orientation, the mouth should face the local direction of movement of migrant birds at the season which is likely to be most prolific.

(4) DESIGN—GENERAL (See Figs. 1 and 2).

The dimensions of the trap will depend on the site, the number of trappers that will normally be expected to work the trap, and on the resources available for construction. A trap with a mouth wider than 25—30 feet is difficult to manage without several well-drilled trappers who have had plenty of experience on the trap. About five yards of frontage per trapper is as much as can efficiently be managed. A long, narrow trap is, generally speaking, preferable to a short widely splayed one, because in a narrow one, birds are less likely to break back past the trappers.

At some sites, wing-walls of wire netting extending outwards from the mouth of the trap are beneficial. They tend to prevent birds by-passing the trap.

At the open end of the trap, and at suitable points further in, baffles (D. in Figs. 1 and 2), both horizontal and vertical, should be provided. These are strips of wire netting, 1—3 feet wide, fixed all round the mouth of the trap, and similarly further in, and sloping inwards at about 60° to the main wire netting of the trap so as to make a "lobster-pot" effect. They prevent the escape of a large proportion of birds that break back, and amply repay the trouble and expense of fixing them.

A wire should be stretched horizontally across the mouth of the trap and about a foot below the roof to act as a perch for flycatchers (*Muscicapa* sp.).

The frames supporting the wire netting are like a series of soccer goal posts of equal or slightly diminishing height, and of decreasing width. The height at the mouth should not exceed 7—10 feet. They should converge to a frame about 4—6 feet high and about 6 feet wide. The trap should present birds driven into it with a "point of no return" beyond which the transparent back of the collecting box appears the only or the obvious way of escape, and, in any case, a preferable one to breaking back to the mouth. The "point of no return" illusion is created by changes of direction in the remainder of the trap both in horizontal sense and also in the vertical sense, by making the remainder of the trap slope upwards to the collecting box. Changes of direction have the additional advantage of slowing birds down so that they do not fly at full speed against the back of the collecting box. The birds must, however, be led easily and naturally to the collecting box,

Changes of direction must not, therefore, be too sudden and sharp. Doors, to close behind birds driven into the trap are essential, at at least one point, best at or just outside the "point of no return" and, preferably, also at the collecting box opening. Trappers should be able to see clearly birds nearing the main door.

Before the collecting box is reached, therefore, the following additional parts are required (see Figs. 1 and 2)—

(a) a length of wire netting passage, A, clear of cover or with only very thin cover converging to

(b) a frame, B, constructed as a door frame with a well-fitting door. The opening and closing of this door is best controlled by a wire leading to a point further back in the mouth of the trap. This door is called the main door.

(c) a small, rising and sharply converging passage, called the "funnel" leading from the main door to the opening of the collecting box. The relative positions of the collecting box and the funnel should be such that the sky, or at any rate as much light as possible, can be seen through the glass back of the box from the funnel. The centre line of the passage, A, should be at a slight angle to the centre line of the mouth, and the funnel should be at an angle of about 30° to 45° to it in turn. Traps with only one change of horizontal direction are satisfactory and cheaper, but two changes of direction assist the "point of no return" illusion and lead birds more naturally to the collecting box. The control of the main door is best from a point further back so that birds are not followed too closely. If they are too much flurried before they get into the collecting box, they may damage themselves against the wire netting.

It is a great convenience if a door, called "the trapper's door", is provided in the side of the netting near the main door. It saves trappers having to go round by the mouth of the trap to get to the collecting box.

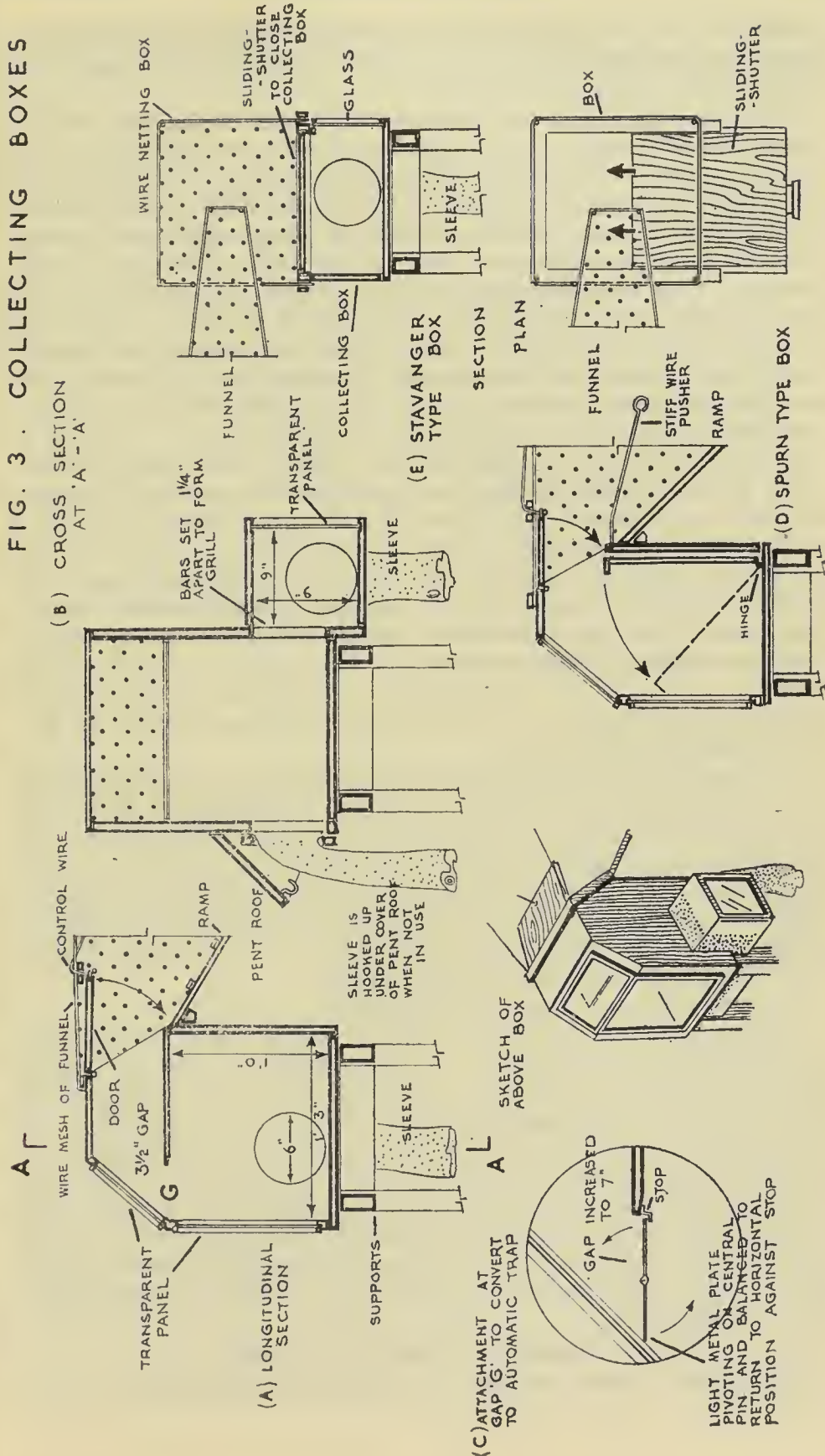
Additional lures may be provided in the mouth of trap, such as a bird table with food, and drinking water. Water is a much greater attraction if moving. The easiest way to provide moving water is to hang a container over a small concrete pool and to make a hole in the container with a wood plug slightly ill-fitting so that water drips at the rate of about one drop per two or three seconds. Turnip seed is a cheap and efficient bait for finches (*Carduelis*, *Chloris* and *Fringilla* sp., etc.). Bread crumbs are attractive to many species.

When a trap is being constructed, it will save much future trouble and expense if a carpenter is employed to make and set up the frame of the main door, and to fix the main door. The trap can then be built outwards from the frame. A good wren-tight door will result.

(5) THE COLLECTING BOX.

This is a box with an opening to the funnel and with a trans-

FIG. 3. COLLECTING BOXES



parent back. It is provided with a hole about 6 inches in diameter, closed by a sliding shutter or by a cloth sleeve, and through which birds can be taken out by hand.

Opinion at at least two observatories favours very large catching boxes, because large flocks of birds are sometimes caught at one drive, and if the collecting box cannot contain the whole flock some birds will damage themselves against the netting of the funnel. A very large box is, however, extremely inconvenient on the more frequent occasions when only one or only a few birds are caught, and may lead to prolonged efforts to catch a bird with the hand. This breaks the cardinal rule of kindness to birds. The ideal arrangement would probably be a glass-lined funnel to hold the flock, and a small and convenient collecting box. Expense rules out that solution, however, and each trapper must work out a compromise to suit the catches he is likely to get.

If a bird is to be caught quickly and easily, the horizontal dimensions of the bottom of the box should not exceed 18 inches \times 18 inches, and the trapper must be able to see through the back of the box his hand and the bird he is catching. The box should be at a convenient height from the ground for working. The shutter or sleeve should be 3 feet—4 feet 6 inches from the ground. The glass of the upper part of the box should slope, because a slope tends to deflect birds downwards to the bottom of the box, and because the force of the impact of a bird flying against the glass is reduced by the slope. To be effective the slope must be at least 60° , preferably 45° .

A "small-bird" box should be attached to the main collecting box. The partition between the boxes should consist of a grille of vertical wires or rods $1\frac{1}{4}$ inches apart. The "small-bird" box should be at a lower level than the main box, so that birds do not tend to get back through the bars when they see the trapper's hand. This arrangement enables a small bird chased into the trap by a hawk to escape, and also allows small birds caught simultaneously with large birds to escape from trampling.

There are many variants in box design.

Figures 3 (a) and (b) show a type of box that has proved satisfactory at Cley Observatory. Fair Isle Observatory uses automatic boxes as shown in Figure 3 (c). If such boxes are used they **MUST** be visited very frequently. A small bird may be killed by an hour or two of confinement in a box. Spurn Observatory uses boxes with no internal shelf, but with a hinged plate at the front of the box which is pushed back till it impinges on the glass back, by means of a stiff wire pusher operated from the funnel, (see Fig. 3d). The Swedish trap at Öland has a curved transparent plastic back. Fig. 3 (e) shows a simple type of box that has proved successful at Stavanger.

(6) VARIANTS ON THE USUAL DESIGN.

(a) "Gully" traps have proved very successful on Fair Isle. The

upper ends of steep sided and narrow gullies, or ravines, have been roofed with wire netting, and main doors, funnels and collecting boxes fitted at the upper end.

(b) Double traps, with mouths facing in opposite directions, have been made at Spurn and Fair Isle. That at Spurn was sited at a point where an old chalk bank disappears into a large patch of sea buck-thorn and elder. It was designed to catch such birds as Wheatears (*Enanthe ænanthe*) and Meadow-Pipits (*Anthus pratensis*) with the mouth facing the bare chalk bank, and cover-loving birds with the other. It was also designed to be convenient for both migration movements, the directions of which are well defined on a peninsula like Spurn. The two mouths shared a common funnel at right angles to each, but this arrangement was not altogether satisfactory. The change of direction was too sudden for driven birds, and a great many made no attempt to enter the collecting box. The double trap at Fair Isle (plate 82) is on a stone wall and was originally two straight traps, butted back to back. The mouths are rather wide and short. Birds entered the mouths quite satisfactorily, but nearly all broke back past the driving trappers. At both observatories each trap was later fitted with a separate funnel, properly angled. The bad effect of the lack of any "point of no return" illusion in the Fair Isle traps was most marked, and the modifications resulted in greatly increased effectiveness.

(c) Portable Heligoland traps have been developed by several ornithologists. All are designed to be carried in an ordinary car, and to be capable of erection in a period of the order of one hour. Mr. R. Chislett has a funnel made of light wood frames covered with wire netting and makes a mouth of bamboos and strawberry-netting. Colonel R. S. P. Bates uses triangular frames of stiff wire with wire netting soldered to them. The frames are bent through about a right angle about the central axis. Each frame is fitted with a small collecting box thus making a simple trap with no funnel and with a mouth of triangular section. Dr. K. B. Rooke has made a portable trap specially designed for the shore at Portland. The mouth is made up with guyed steel uprights carrying string netting. This trap is larger than the others described. The time of erection is of the order of one day. One of the earliest was that of Herr A. Schifferli, of Sempach, Switzerland. It can be erected on a foundation of stakes in a reed-bed, or similarly on stakes to take birds from the top of a high hedge. The mouth is made of iron frames, 2 metres by 1 metre, covered with wire netting. The frames are joined by string "snake" lashings. If a two-frame width or height is required, the frames are joined by diagonal sticks, "snake" lashed to the netting. The funnel consists of similar tapering frames joined by rings, so that it will "matchbox" flat for packing. When erected, it is kept square by lashing to the frames of the mouth, and to the collecting

box. The collecting box is made of stiff wire with wire netting soldered to it. It has a central shelf, a removable glass back in slides, and a sliding door at the bottom.

Herr Schifferli's trap is shown in Fig. 4.

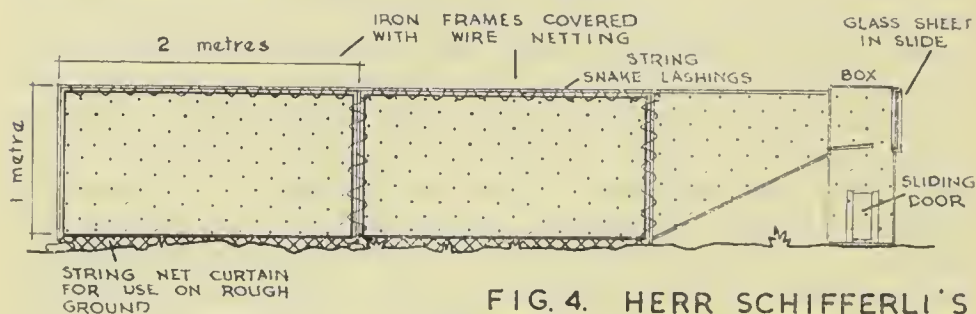


FIG. 4. HERR SCHIFFERLI'S PORTABLE TRAP

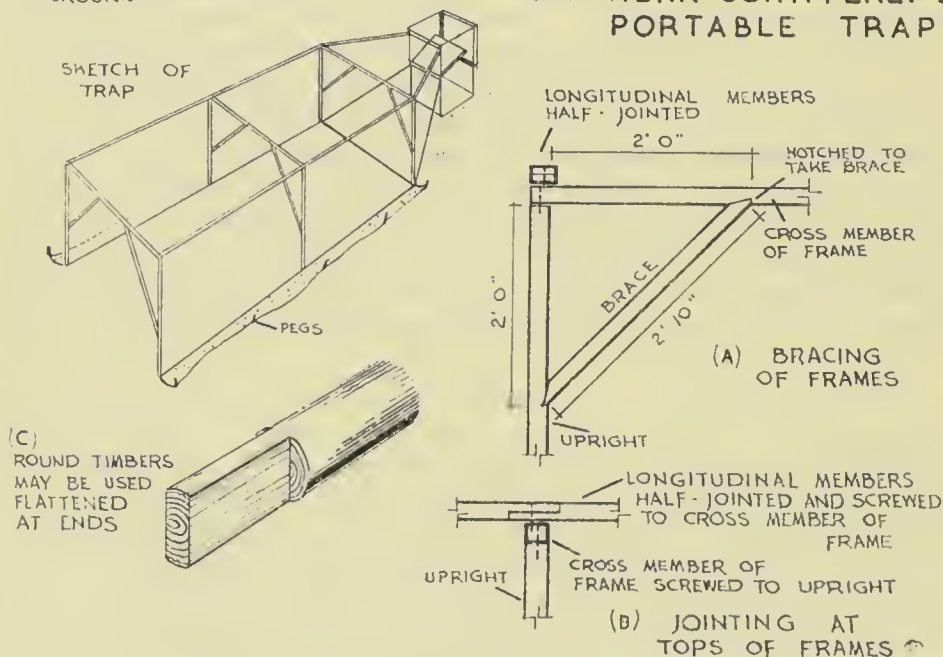


FIG. 5. CONSTRUCTION of WOOD FRAMES

(7) DETAILS OF DESIGN.

(a) *Framing.* The frames may be made of a variety of materials and, in most cases, design will be dictated by stocks available or by the type of material most easily obtained. The neatest finish will be given by timber, preferably squared, and properly framed and jointed (see Fig. 5) or by small gauge water pipe or electrical conduit connected by the standard bends, T-joints, etc. With care, however, a wren-proof wire covering can be arranged round lashed junctions of poles or round the joints of tubular scaffolding. If timber is used, it, or at any rate the bottoms of posts, should be creosoted. It is best to get the timber treated by creosote in a pressure plant, but such plant is not common, and transport charges may be prohibitive. Timber posts should be sunk at least 18 inches into the ground in good ground. In very loose sand it may be

necessary to sink them as much as five feet. Metal posts should each be set in a concrete block of not less than 1 cubic foot volume poured in a hole so that the top of the concrete is flush with ground level.

(b) *The wire netting.* The finer the mesh of the wire, the greater will be the expense, and the greater the resistance to wind and snow. A variety of mesh sizes will therefore probably be used in construction of the trap. The funnel is the part of the trap where birds will make the most strenuous efforts to escape. The netting of the funnel and of the main door must be at most $\frac{1}{2}$ inch mesh if Wrens (*Troglodytes troglodytes*) and Chiffchaffs (*Phylloscopus collybita*) are to be retained. The netting of the mouth may be $\frac{5}{8}$ inch or $\frac{3}{4}$ inch and of the wing walls 1 inch. The roof of the trap may also be of coarser mesh than the walls, provided that a strip about one foot wide along the edges of the roof is of the same mesh as the walls. A coarse mesh for the roof is desirable, to avoid trouble in the event of heavy snow. The gauge of all wire used should be about 19 gauge. Netting of finer gauge does not last well. In trap construction, trenches about 6 inches deep should be dug right along both sides of the trap before the wire is put on. The bottom of the wire should be set at the bottom of the trenches, which should be filled in when wiring is completed. Adjacent widths of netting should be overlapped for a distance at least three times the mesh (e.g. $\frac{3}{4}$ inch netting should overlap at least $2\frac{1}{4}$ inches). The best joint is made by "sewing" with fine wire. A light person can sit on a plank supported by the frames to pass the "sewing" wire back when sewing the roof joints.

(c) *Doors.* Moving parts are always likely to be a source of trouble and to involve careful maintenance and the more complicated they are, the greater are the likelihoods. The simplest arrangement for the main door is to hinge it to the top horizontal cross member of the frame so that the door falls to close. Gravity cannot go wrong. If the frame is sloped back towards the collecting box at a slope of about 4/1, the door will be kept closed by gravity. It can be controlled by a wire led back to the control point by small pulleys, rings or tubes, or be kept open by a vertical stick which can be pulled away by a cord. Wire or fishing line is much more satisfactory than ordinary cord for control cables. Cord stretches, and contracts when wet. Wire remains the same length.

If the door is hinged to an upright, more complicated arrangements will be needed to control it. Avoid patent spring closers like the plague. They are not normally designed for use in the open, and quickly go wrong. The main door itself should be a stout frame covered with the same netting as that of the funnel. *It is most important* that arrangements be made to prevent birds getting behind open doors. Either the opened door should fit closely to the wire of the trap, or a light false roof of wire should be made to which the open door can closely fit. The simplest

control for the trapper's door is made by boring a hole through the upright of the frame at a convenient height, pushing a metal rod through the hole and bending its ends at right angles close to the upright so that they can swing to embrace the closed door. A nail on the inside and on the outside of the door on which they can rest in the closed position completes the device, which is easily operated from either side.

(d) *The funnel.* A most important point that is always overlooked by inexperienced constructors is that the wire mesh of the funnel MUST come close to the collecting box opening (see Fig. 6).

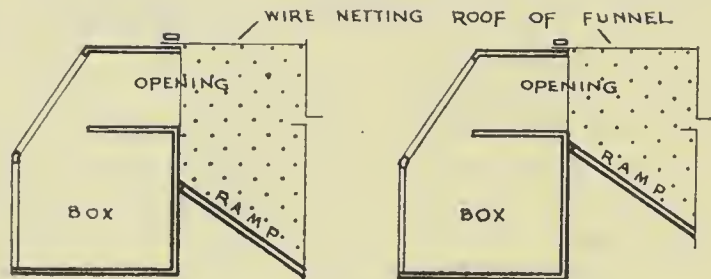


FIG. 6. WRONG RIGHT

The part of the floor of the funnel which rises from the ground at the bottom of the collecting box opening is known as the ramp. The ramp should be opaque, and strong enough to take the weight of a trapper who wants to get his hand to the collecting box opening, to deal with recalcitrant birds or to operate the pusher of a Spurn-type box. Even in the biggest traps, the funnel need be no bigger than just large enough to contain one trapper comfortably inside the closed main door. If the funnel is unnecessarily long, the advantage of the bends in slowing birds down is lost, and in a big funnel birds do not easily see the apparent way of escape at the collecting box. The funnel should be kept clear of vegetation. Bushes in a funnel are an intolerable nuisance.

(e) *The collecting box.* This may be made up from boarding, or may consist of a wood frame covered with light boarding, asbestos sheeting or any other material available. The transparent back panels may be simply glass sheets sliding in grooves, or a rebated framing carrying glazed wooden panels. It is necessary that the transparent panels be easily removable, so that the trap can be put out of action when it is not used for lengthy periods. If the trap is not being used for two or three hours, it may be temporarily put out of action by leaving one of the doors closed, preferably the door of the box opening, because this may be opened after birds have been driven into the trap and the main door has been closed. A piston for reducing the size of a large box consists of a board shaped to the vertical section of the collecting box lower compartment and firmly fixed to a handle protruding through a tube bearing secured to the side of the box. The piston head should be $\frac{1}{4}$ inch

clear of the sides and bottom of the box, and should have strips of rubber fixed to its edges to sweep the bottom and sides. The piston should be kept in place by the fit of the handle in the tube bearing. Such an arrangement reduces the chance of pinching a bird's wing or leg by the action of the piston, (see Fig. 7).

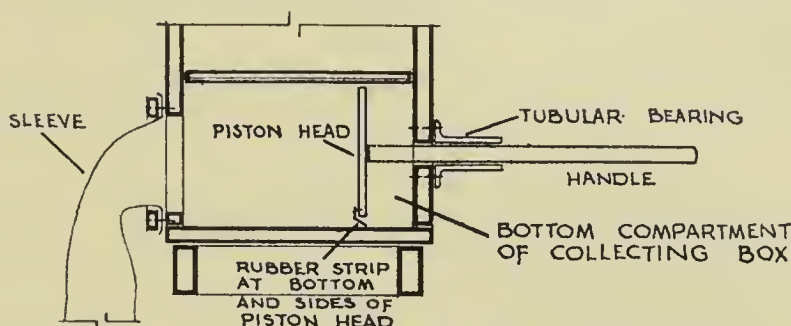


FIG. 7. PISTON FOR REDUCING SIZE OF LARGE BOXES

Various substitutes for glass have been tried in collecting boxes. Perspex sheets soon lose their transparency and are not so easily cleaned as glass. Wire gauze such as is used to fly-proof larders was successfully used in Egypt, but quickly rusts in the damp climate of Great Britain. It is a wise precaution to keep some of one of these substitutes as a "spare" so that a first-aid repair can quickly be done if a glass is broken.

(f) *Shutters and sleeves.* Both have their disadvantages. Unless they are very stoutly constructed, shutters are apt to shrink or warp and become loose, and even when they are well-fitting, the occasional accidental escape of a bird while it is being taken out of the box is more likely than with a sleeve. Shutters should be made so as to slide vertically, not horizontally. Horizontal shutters are apt to be blown open by the wind. A sleeve, on the other hand, while more efficient, becomes wet and uncomfortable to use in bad weather. A suggested way of overcoming that disadvantage is shown in Fig. 3 (b). A small pent-roof is fixed over the opening, a hook-screw is fixed between the opening and the roof, and a button hole is made near the end of the sleeve. The sleeve can then be hooked up under cover after use. Part of an old flannel trouser leg makes as good a sleeve as anything.

(g) *Accessories to the Trap.* (i) A hut or some building with table and chairs sited close to the trap is almost essential. It is useful to keep ringing registers, to store rings, trap glasses when not in use, books, tools, spares, clapnets and portable traps, bags of seed for bait, and the mixed bag of oddments which observatories acquire. The building must have a sound floor on which a dropped ring may quickly be found.

(ii) One or more portable collecting boxes are very useful for transporting a multiple catch of birds to the ringing place. A

box about 9 inches by 9 inches by 9 inches is suitable. It should be provided with a carrying handle or sling, and a sleeve. A useful addition is to have one side of the box open and fitted with grooves to take two slides, one glazed and one opaque. A bird can then be kept quietly in the dark, and inspected by lifting the opaque slide. If birds have to be carried more than a few yards, linen or muslin bags are preferable to boxes.

A bank of small boxes with opaque shutter openings is another useful accessory. Some system of marking to differentiate between occupied and empty boxes is essential

(iii) The following tools are suggested :—

1. Rule with stop at the millimetre zero, and dividers for measuring birds. Pliers of various sizes.
2. Tools for trap maintenance :—
Spade, fork, garden shears, scythe, billhook, handsaw, tenon saw, hammer, screwdriver, pliers side-cutting, tinsmiths' shears (for cutting wire netting).
3. The following spares are suggested :—
Perspex or wire-gauze for repairs to broken glasses of collecting boxes, fine sewing wire, nails, screws, staples, spare hinges, wire netting.

(8) OPERATION.

The driving technique will vary with every trap, and with the species of bird being caught. It must be worked out for each trap. There are, however, certain general principles applicable to all traps and which are suggested for inclusion in trap rules.

(a) Approach to the trap should always be in the normal direction of driving birds. A route for leaving the trap which is well clear of the drives should be worked out and enforced.

(b) Trappers must never stand about in the mouth of the trap.

(c) At every drive one trapper must be responsible for resetting the trap, *e.g.* opening trapdoors and shutting the trapper's door.

(d) Rings must be used in proper numerical sequence, and the rules on the back of the B.T.O. Ringing Committee's schedules must be strictly obeyed.

(e) Other forms of trapping, such as clapnets and portable traps, should be done well clear of the driving area of a Heligoland trap.

(f) Birds should be driven into the trap with the minimum possible noise and violence. Birds like warblers (*Phylloscopus* sp. and *Sylvia* sp., etc.), Hedge-sparrows (*Prunella modularis*), Robins (*Erithacus rubecula*), and other cover-loving birds can usually be gently shepherded almost all the way into the box. Birds of the thrush family (*Turdidae*) require rather more forceful driving and finches, lured into the trap mouth by food or water, can usually only be trapped by a sudden rush. As a general rule noisy driving is only permissible when far from the trap. The nearer to the trap the quieter should be the driving, except, of course, for a final

rush on the mouth of the trap which is sometimes necessary.

(g) When birds are in the mouth of the trap, trappers should keep in line with each other. Birds break back much more easily if trappers are out of line.

(9) PLANTING OF COVER.

Plants bearing berries or seeds that are likely to attract birds should generally be planted in and near the mouth of the trap. Lists of trees and shrubs suitable for various habitats, and valuable information on planting and on cuttings is given in Rowe (1951). Of the 37 species or genera of shrubs listed in these books as suitable for very exposed parts of the coast some have already been established in the extreme conditions usual at observatories. *Escallonia* and *Veronica*, both evergreens, have done well at Skokholm. Experience at Heligoland, the Isle of May, Spurn and Cley, has shown that Elders (*Sambucus* sp.), Privet (*Ligustrum* sp.), Sea Buckthorn (*Hippophæ rhamnoides*), and Sycamore (*Acer pseudo-platanus*) are about the only woody plants that have been tried which are capable of surviving at first, though others may do so when the elders have grown up enough to protect them. Other plants that may prove useful are the Tree Mallow (*Lavatera arborea*), which has been successfully established at May, Skokholm and Cley, but is unlikely to grow north of the Firth of Forth, and the Hop (*Humulus lupulus*), which, at the Isle of May, has done splendidly as a climber up wire or poles, and the Tea Plant (*Lycium chinense*), which grows luxuriously on the east coast and has been successfully used at Cley. Small plants likely to attract birds are Yellow Loosestrife (*Lysimachia vulgaris*), Mullein (*Verbascum thapsus*), Thistles (*Carduus* sp.), Sea Rocket (*Cakile maritima*), Sweet Vernal Grass (*Anthoxanthum odoratum*) (has been known to attract Scarlet Grosbeaks (*Carpodacus erythrinus*), at Fair Isle).

(10) ACKNOWLEDGEMENTS.

I am much indebted to Messrs. W. B. Alexander, K. Williamson, G. H. Ainsworth, and R. A. Richardson who have kindly read this paper and given me very helpful criticisms and suggestions, to Mr. Williamson also for permission to use the photograph illustrating this paper and to Mr. G. C. Johnson for drawing the figures.

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THE UNDERWATER ACTIVITIES OF THE DIPPER.

BY

J. W. JONES, D.Sc., Ph.D., *Dept. of Zoology, Liverpool University*,
AND G. M. KING, *Dee and Clywd Rivers Board, Chester*.

SEVERAL ornithologists have described the underwater activities of the Dipper (*Cinclus cinclus*). Ingram, Salmon and Tucker (1938), have shown how the bird walks under the water with its head stretched out, occasionally assisting itself with its wings, and turns over pebbles in search of food. Others such as Kirkman (1911-1913) have described how the bird can swim under water by using its wings.

For the last three years the Dipper has visited our salmon observation tank on the banks of a tributary of the Welsh Dee. The tank is 33 feet long and 5 feet wide; on its inshore wall it has 5 armour plate glass windows through which we observe the spawning activities of the Atlantic Salmon (*Salmo salar*). A more detailed description of the tank can be found in Jones and King (1949).

The Dipper visits the tank in search of salmon eggs, and we have often induced it to come by placing the eggs at various points on, and in, the tank. Thus, on very numerous occasions we have been able to observe clearly through the windows its under-water activities.

The Dipper usually makes its presence known to us by singing—and dipping—on the outside wall of the tank, and then if no one has moved in the meantime, it drops down to one of the rocks inside which stand up above the water surface. If any “bait” eggs have been put on this rock they are eaten. If still hungry the bird will dip several times and put its head under the water as if searching for eggs. This is often repeated; the bird is presumably trying to see if there are any eggs on the gravel in the tank. If there are none in the immediate vicinity of the rock on which the bird is standing it descends into the water either by walking in, or by diving in, and moves about actively by wing movements, which enable it to swim quite rapidly. There have been times when the bird has moved upstream with apparent ease against a current of water moving at slightly more than a foot per second. Observations have also been made of the bird holding its position in this moving stream by means of its wing-movements and feeding whilst so doing. The best view of the swimming activity was obtained when the bird swam nearly the whole length of a 6 foot window whilst looking for salmon eggs—it was probably submerged for as long as 30 seconds.

Under the water the bird appears quite silvery, due to a coating of air bubbles over its body. In the tank the Dipper has not been observed to walk under water, nor has it been seen to hold on to the bottom by its feet, but a ciné film taken of the bird flying under water gives the impression that it may push itself off the

bottom by means of its feet. It can, however, whilst submerged move up and down in the water to and from the gravel with apparent ease, and there have been many instances when this up and down movement was carried out entirely by wing movements. It is suggested that the up movement from the gravel is a result of two factors :—

- (1) The current pushing the bird downstream.
- (2) The natural tendency for the bird to float to the surface of the water.

Therefore, it is probable that the movement of the bird up from the gravel is automatic, and that only when moving downwards is the bird actually pushing itself down with its wings. The position of the wings when swimming appears to be more forward than in the normal flying position thus giving the bird a humped appearance.,

There is no doubt that the Dipper does eat salmon eggs, but as we have seen in the tank the bird can only reach stray eggs which will never have the chance to develop, and therefore the Dipper must not be regarded as an enemy of the salmon.

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STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLV. THE SCOPS-OWL.

Photographed by WALTER E. HIGHAM.
(Plate 81)

THE Scops-Owl (*Otus scops*) is a South European species, migratory in the northern part of its range, and occasionally reaching Britain as a vagrant. The accompanying plate of a bird photographed in the Camargue, and kindly supplied by Mr. Walter Higham, shows very well the typical face pattern of the species. The facial discs are somewhat longer than they are broad, giving a questioning look to the face, in contrast to the flat-browed, frowning effect of the Little Owl (*Athene noctua*) whose facial discs are distinctly broader than long. It also shows that the "ears" of the Scops can be flattened until virtually invisible. Normally, a bird seen in daylight on passage would be attempting to conceal itself in the foliage of a tree, where it often draws itself up vertically, with attenuated appearance accentuated by fully erect ear-tufts.

P. A. D. H.

NOTES.

Birds with abnormal bills.—Following the publication (*antea*, vol. xlv, pp. 60, 349-350) of reports of birds with abnormal bills, we have received a number of records of abnormalities affecting a variety of species :

ROOK (*Corvus frugilegus*).—One obtained at the lightship "Haaks" and brought to the Zoological Station at Den Helder, Holland, in March, 1935, had the upper mandible considerably elongated and curved downwards. When in captivity this bird fed in a series of sideways scooping movements. (Dr. G. J. Broekhuysen). An adult, seen with other Rooks near Horley, Surrey, on several days in March, 1947, had the upper mandible nearly twice as long as the lower and sharply decurved, yet it appeared to be in reasonable condition. (I. J. Ferguson-Lees).

JACKDAW (*Corvus monedula*).—A young one, the bird shown on plate 84, was trapped near Dorking, Surrey, in June, 1952. It was found to be in very poor condition, its crop empty and breast-bone devoid of flesh, while the feathers were very dirty and matted together. Its appearance suggested that it had been unable to obtain its own food from the time that its parents ceased to feed it. (Douglas F. Lawson.)

STARLING (*Sturnus vulgaris*).—One with crossed mandibles, Wilnecote, Warwicks., September 15th, 1951. (M. A. Arnold.)

HOUSE-SPARROW (*Passer domesticus*).—A female at Alfriston, Sussex, June 6th, 1951, with the upper mandible prolonged and curved downwards. The bill was half as long again as a normal one, but the bird fed without difficulty. (R. B. Warren.)

SKY-LARK (*Alauda arvensis*).—One at Freshfield, Lancs, May 25th, 1951, with the upper mandible curved down, crossing the lower mandible about midway ; bird found dead. (E. Huyton, D. J. Low.)

BLUE TIT (*Parus cæruleus*).—One, Newcastle-on-Tyne, February 13th, 1952, with upper mandible elongated and curved down in a fine needle-like point beyond the tip of the lower ; bird apparently otherwise healthy. (W. D. Ryder.)

BLACKCAP (*Sylvia atricapilla*).—Adult female trapped at Great Saltec, Co. Wexford, October 28th, 1951, had long curved upper mandible which had grown to one side ; bird apparently suffering no ill effects as was evident from its weight (19.81 grs.). It was feeding on blackberries, a food not specifically mentioned in *The Handbook*. (Major R. F. Rutledge.)

ROBIN (*Erithacus rubecula*).—One at Nutfield, Surrey, tamed as a chick in 1951, has lower mandible showing to one side of upper for its entire length ; upper mandible has projecting downward curve at tip. (Miss B. A. Kneeller.)

GREAT CRESTED GREBE (*Podiceps cristatus*).—One at Queen Mary reservoir, Middlesex, on February 2nd, 1952, in nearly full summer plumage, had upper mandible about three fifths the normal length and lower mandible roughly one sixth longer than usual with a distinct up-curve. (A. J. Bruce.)

Birds feeding on rotten pears.—With reference to the note on Redwings (*Turdus musicus*) feeding on rotting apples (*antea*, vol. xlv, p. 37), I can add that I saw this species as well as *Parus* spp., Great Spotted Woodpeckers (*Dendrocopus major*), Blackbird (*Turdus merula*), Song-Thrushes (*T. ericetorum*), Fieldfares (*T. pilaris*) and Chaffinches (*Fringilla cælebs*) feeding on rotting fruit beneath a pear tree, at Innsworth, Gloucestershire, during the cold spell of early 1947.

JOHN ASH.

"False-feeding" of Passerines.—With reference to the note on this subject (*antea*, vol. xlv, p. 406), Mr. A. E. English reports similar behaviour in trapped House-Sparrows (*Passer domesticus*)

at Sutton, Surrey, during the summer of 1951; birds were seen to pick up quite large pieces of bread on the close approach of the trapper, sometimes letting them fall only on being handled.

Some observations at a Magpie roost.—In connexion with Derek Goodwin's paper (*antea*, pp. 113-122), on notes and display of the Magpie (*Pica pica*), some observations of mine made in E. Lancs. between October, 1951, and February, 1952, may be of interest.

The East Lancashire Division of Rossendale is very hilly and very short of suitable cover for birds, so any adequate area of woodland is attractive, especially for roosting purposes. One of the largest areas of deciduous woodland lies on a south-facing slope between the 700 ft. and 1,000 ft. contours. From November, 1951, to February, 1952, this wood was used as a roost by Magpies varying in number from 28 to 55, but normally between 30 and 40. Of the Magpies using the wood one group of 20 to 25 birds was more or less constant in numbers and appearance and seemed to be a definite unit attached to the wood, while other smaller groups visited the wood spasmodically. This group could be seen feeding in the late afternoon (3.00 p.m. to 3.30 p.m.), nearly always to the west of the wood on or around a refuse dump some three-quarters of a mile away.

Flight-lines and behaviour.

By far the largest numbers approached from the west and north-west, following the hillside between the 800 ft. and 1,000 ft. contours. The birds usually came in as a flock, especially in the case of the group of 20 to 25, but others came in twos or in small parties of 6 or 7.

The normal behaviour was to come in to an outlying part of the wood, which acted as an "alighting spot." Here they dropped into the topmost branches, often preening and uttering a soft, low-pitched "yelp" note which would seem to correspond to Goodwin's "soft, gentle 'tchurch'." The normal harsh, chattering call was rarely heard unless the birds were disturbed. From the "alighting spot" there was a gradual movement to the centre of the wood for roosting. Sometimes a group of bushes about 200 yards to the west of the wood was used as an "alighting spot." An analysis of times gives an average of arrival at the roost between 37 minutes before and one minute after sunset; it may be noted, however, that in this position the sun disappears behind hills to the west some time before actual sunset.

Behaviour in social gatherings during late January and early February.

It became evident from January 26th, 1952, that a change had taken place in the normal daily routine of the Magpie flocks, in that they would fly into the woods some time before the normal roosting time to indulge in some twenty minutes of social activity before flying out again for a last feed before roosting. On two occasions, January 26th and February 3rd, this took place between 3.50 p.m. and 4.10 p.m., but on February 2nd it took place at

4.48 p.m., just before roosting. Activity during these periods took the following forms :—

1. Chasing and display flights.

This usually involved two, but sometimes three or four birds. With a pair of birds a chasing flight would often take place with rapid twists and turns through the branches. When the birds came out into the open the flight became more of a display, as the birds appeared at times almost to stop and hover as one approached the other with tail fanned, so that there was a kind of pause and coming together in flight. The call note used at this moment was higher pitched than normal, a more liquid bubbling or chuckling note like a quickly repeated series of the “yelp” notes mentioned previously.

On two occasions late display flights turned into long flights across to the other side of the Irwell valley, by two pairs of birds. These were not seen to return by the time the roost had settled down. There was a suggestion here of the beginnings of the break-up of the winter roost as mated pairs drifted away to roost in their selected nesting areas.

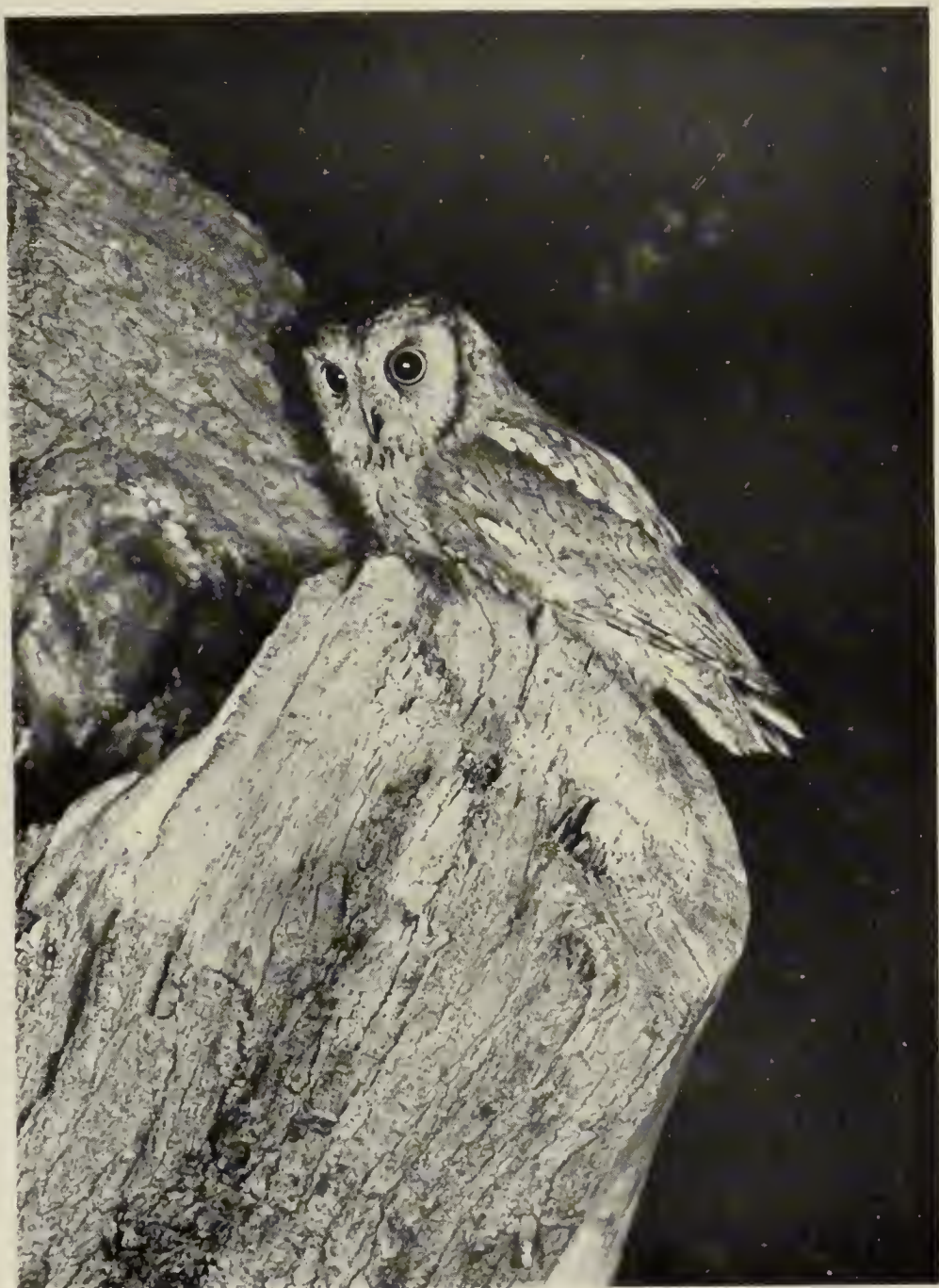
2. “Invitation flights.”

With the flock in the tree tops there was constant movement and fluttering from bough to bough. This was complex and difficult to follow. Movements seemed to be based on a “follow-my-leader” pattern, as when one bird flew a few yards it was followed by one, two or three others. By keeping one particular “pair” under observation the following points were noted : it seemed clear that the same bird (? female) always moved first, to be followed at once by the other (? male). Sometimes a third and fourth bird would follow before the second and settle near to the first. If this happened, however, the second bird would fly across and flutter above the third (and fourth) in the act of dropping near to bird 1, whereupon bird 3 or birds 3 and 4 would fly back to the original perch. My tentative explanation of this behaviour is as follows :—

- (a) Bird 1, presumed female, makes a short “invitation flight.”
- (b) Bird 2 is either the regular mate or has a strong claim, and makes this known by following immediately.
- (c) Birds 3 and 4 are unmated males who follow bird 1, but give way without any show of force when bird 2 indicates his prior claim by settling nearer to bird 1.
- (d) In order to do this, bird 2 often has to flutter over birds 3 and 4 to force them to move before he can settle close to bird 1.
- (e) It seems possible that “invitation flights” could lead up to chasing and display flights which, as mentioned previously, may turn into long flights by paired birds away from the main Magpie gathering.

3. Pecking at branches.

This action was seen on several occasions and obviously corresponds to Goodwin’s “hammering.” Birds were seen to strike at

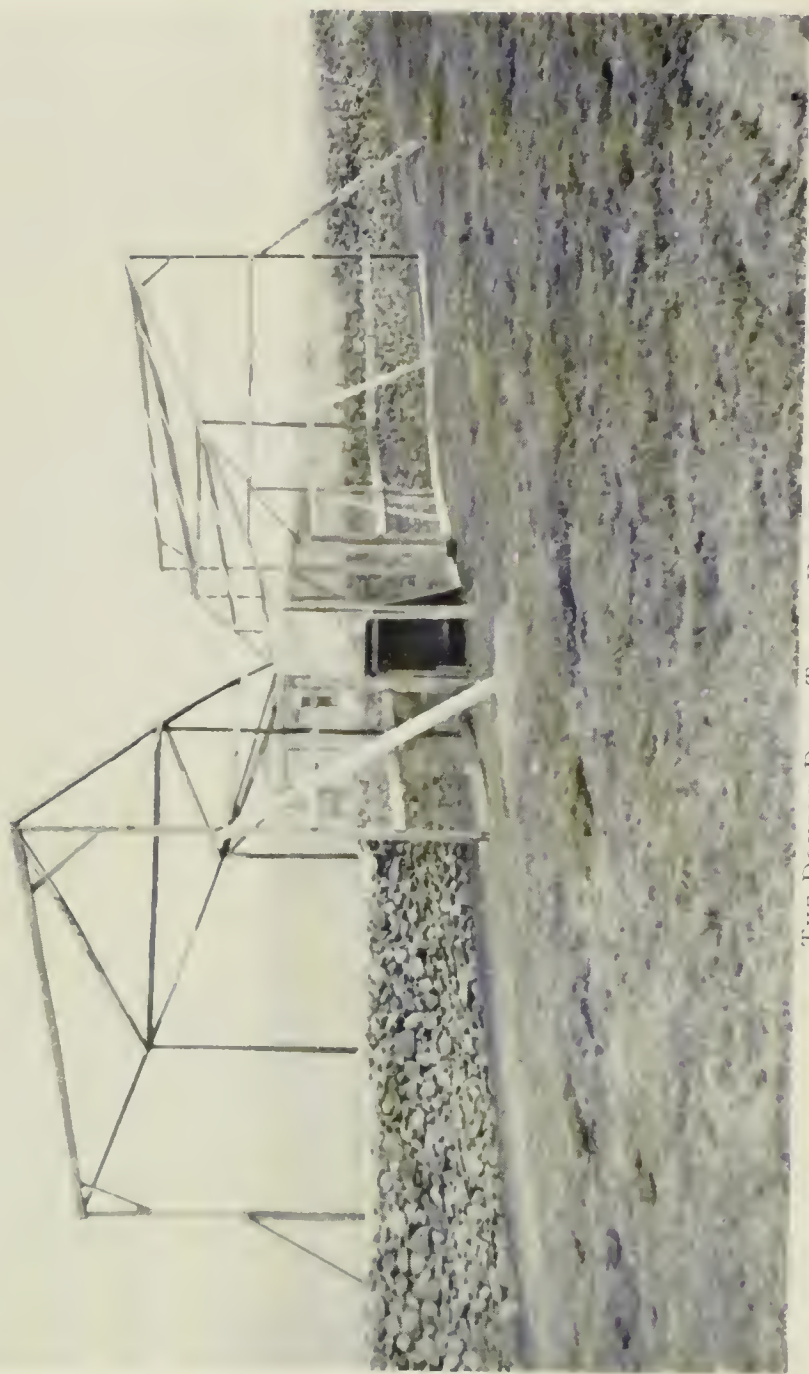


SCOPS-OWL (*Scops otus*)

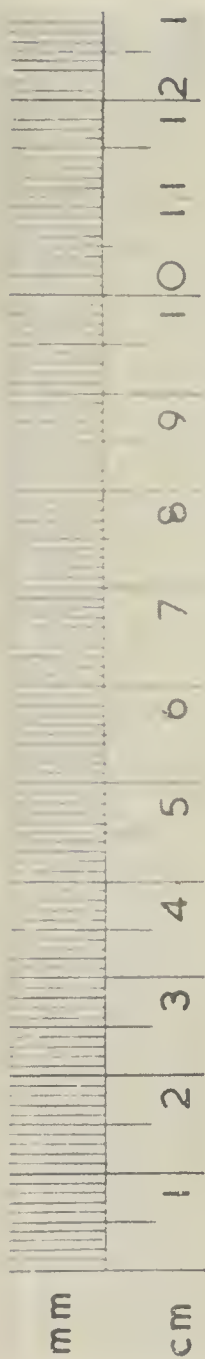
ADULT AT ENTRANCE TO NEST-HOLE. CAMARGUE, FRANCE.

(Photographed by WALTER E. HIGHAM.)

(see page 401.)



THE DOUBLE DYKE TRAP, FAIR ISLE.
(By permission of K. WHITAMSON.)
(see page 393.)



WHITE-BILLED NORTHERN DIVER (*Colymbus adamsii*)
BILL OF ADULT IN WINTER. MONIFIETH, ANGUS, 1952. (Natural size.)
(Photographed by J. GRIERSON.)
(see page 423.)



UPPER : WHITE-BILLED NORTHERN DIVER (*Colymbus adamsii*).
HEAD OF ADULT FEMALE IN WINTER. SANDERSEND, YORKSHIRE, 1952.
(Photographed by A. B. WALKER.)
(see page 422.)

LOWER : JACKDAW (*Corvus monedula*)
JUVENILE WITH DEFORMED BILL. DORKING, SURREY, 1952.
(Photographed by DOUGLAS F. LAWSON.)
(see page 402.)

stout branches between their feet with pick-axe-like blows of their beaks. In each case this took place at a time when the constant movement of "invitation flights" was in progress. No signs of feeding were observed and I noted at the time that this seemed more like a form of emotional activity.

ERIC WARD.

[We have submitted Mr. Ward's notes to Mr. Derek Goodwin who has made the following comment on the "Invitation flights":—"I have observed similar behaviour but am doubtful of its significance. Some gatherings of both Jay (*Garrulus glandarius*) and Magpie are certainly primarily aggressive encounters between pairs which have already been formed, and do not involve unpaired birds. But I think that the big noisy gatherings do, at least as a rule, result in pairing taking place, even though most of the birds attracted into taking part may be already paired. These hostile encounters at the meeting undoubtedly have a sexually stimulating effect, the fighting being very definitely linked with sexual feeling. Jays often fly straight to the nest-site after a fight with a neighbouring pair. Male and female Jays (? and Magpies) display to their *sexual* rivals with the same notes and posturings which they use towards their mates." On "pecking at branches" Mr. Goodwin comments as follows: "I use the term 'hammering' when the bird strikes objects with the point of the closed bill, and 'pecking' when it opens the bill and seizes the object it strikes at. The Magpie does both in moments of nervous tension."—EDS.]

Hen Chaffinch attacking window.—With reference to the note (*antea*, vol. xlv, p. 407), on this subject, Miss B. A. Kneller reports that over a number of weeks in May and June, 1945, a hen Chaffinch (*Fringilla cœlebs*) repeatedly and violently attacked a window at Nutfield, Surrey. This habit is normally confined to cock birds.

Starling taking Blackbird's egg.—Mr. F. H. Johnston reports that on April 3rd, 1952, near Crawley, Sussex, he saw a Starling (*Sturnus vulgaris*) remove an egg from the nest of a Blackbird (*Turdus merula*). The Starling secured the egg in its beak, but left it on the ground on being disturbed.

Unusual nesting-place of Chaffinch.—With reference to the note (*antea*, p. 68) on a Chaffinch (*Fringilla cœlebs*) nesting on a building, Mr. D. Carr has sent details of a nest seen and photographed at Headley, near Borden, Hants, on May 26th, 1952. This nest was placed on the top of a broken door-jamb of a tractor shed, a great deal of material having been used to build up the foundations and make them level. The young flew successfully. [In June, 1946, a pair of Chaffinches built a nest some twenty feet above the ground on a cross-beam in an almost empty Dutch barn near Pease Pottage, Sussex. This nest was destroyed, perhaps by rats, soon after the eggs were laid.—I. J. F.-L.].

Sub-song of Magpie.—The record (*antea*, vol. xlv, p. 15) of the "chirruping" note of the Jay (*Garrulus glandarius*) reminds me

of a similar occasion with a Magpie (*Pica pica*). On August 14th 1949, a fine day, I was on the South Downs near West Dean, in Sussex, when I heard a pleasant subdued warbling coming from a thorn bush some fifteen yards away. It was continued a minute or more, and was unfamiliar to me; it reminded me of the song of the Blackcap (*Sylvia atricapilla*) or Garden-Warbler (*S. borin*) in its phrasing. I expected to find some exotic warbler in the bush; it contained a Magpie, and nothing else.

The Handbook describes attempts at song for most of the *Corvidæ*; the main characteristic of those heard at the spring gatherings seems to be the inclusion of harsh notes. I would like to emphasise that none was heard in this performance, as apparently they were not with the Jay mentioned above; possibly the absence of harsh notes is characteristic of the sub-song of these species.

W. R. P. BOURNE.

Black-Headed Bunting in Devon.—On October 4th, and 6th, 1951, I observed on the west slope of Salcombe Hill, Sidmouth, Devon, what I believe to have been a Black-headed Bunting (*Emberiza melanocephala*).

On October 4th, the bird was seen feeding with Meadow-Pipits (*Anthus pratensis*) amongst tufts of rough, dead grass, when the clear yellow under-parts attracted my attention. The next moment it rose and flew away from me towards a ploughed field, displaying a distinctly greenish rump, but no white in the tail. Subsequently it was seen with binoculars, at a range of c. 100 yards, sitting on the far hedge bordering the field, but no details other than the dark head and the yellow under-parts could be distinguished. The weather was fine with a slight haze.

On October 6th, near the same spot, the bird flew overhead uttering a flat, toneless "chup." It alighted at the top of a hawthorn bush within 40 yards and remained for about half a minute while I examined it with x8 binoculars. The sun, somewhat obscured by haze, was behind me. Head and face were blackish with a narrow, yellowish collar extending round towards the nape. Under-parts were entirely bright yellow except for faint chestnut markings on either side of the upper breast. The upper-parts were brown, but no details were noted. While at rest the bird uttered notes like "chup-it" or "chip-it" before leaving the hawthorn and flying away inland across a root-field. On the wing its flight and heavy build recalled the Corn-Bunting (*Emberiza calandra*). The only points which did not agree with *The Handbook* description were the call-notes and the colour of the rump.

T. J. RICHARDS.

[Because of the somewhat unusual description of the rump of this bird, we asked Mr. R. Wagstaffe, of the Liverpool Museum, for his comments after he had examined a series of skins of the Black-headed Bunting in the light of Mr. Richards's report. In his reply

Mr. Wagstaffe says. "As is well known, the colouration of the rump in this species is within certain limits variable, and, although it could not be described as 'distinctly greenish' in any of our specimens, in some it is quite noticeably greenish-yellow—mustard-yellow, I think would be an apt description. Indeed when these specimens were examined outside the museum building, and under conditions similar to those described by Mr. Richards, I felt that Mr. Richards' observations left little to the imagination. Their rumps stood out greenish-yellow, and in fair, but quite marked, contrast to the rest of their upper-parts. Under these circumstances, I cannot regard as a serious discrepancy Mr. Richards' assessment of the colouration of the rump of the bird he observed, as I can well imagine that under certain lights, and particularly with the bird on the move, the rump would appear more greenish than yellowish." In view of these remarks we feel confident that Mr. Richards' record can be accepted.—EDS.].

Variations in a Cirl Bunting's song during bathing.—On June 2nd, 1952, a cock Cirl Bunting (*Emberiza cirlus*) took a bath in about one-third of an inch of water in a square stone trough at Swanage, Dorset. The latter, mounted on a pedestal, brought the bird level with the top of a three-foot wall, some sixty feet away from the nearest and the lowest of its usual song perches, namely a five-foot tree across the lawn. Normally this bird bathes in a small pond lying well within the song area and does not take very long to complete its ablutions.

On this occasion, however, presumably because of its elevated position outside the song area, it repeatedly sang in the bath. For some minutes indeed it did not bathe at all, contenting itself with hopping about in the water between each burst of song. It followed the sides of the trough, which is nine inches square, not cutting off the corners as might have been expected, but turning each time abruptly at right angles. Presently it began to bathe, gently at first and then with increasing vigour, stopping to sing every few moments as before. This went on for nearly ten minutes with a short song-free period of bathing just before the bird flew away.

What interested us most, however, were the unexpected variations in the bird's singing, there being a change of pitch on three occasions. This change in pitch in the Cirl Bunting's song, not directly referred to in *The Handbook*, was first brought to my attention by W. Walmesley White some fourteen or fifteen years ago. It is not, in my experience, a very rare phenomenon though it can easily be overlooked unless one happens to be listening rather carefully when the change is made. With the bird's singing only twelve feet from the window at which I was standing, the change from one song variant to another could hardly have been overlooked.

The bird began by singing its usual song which *The Handbook* describes as being not unlike the rattle of a Lesser Whitethroat (*Sylvia curruca*), though the two are not easily confused. It

then sang a deeper, perhaps more resonant song, much more nearly resembling the Lesser Whitethroat's rattle. This is, I believe, a fairly frequent song variant; in some cocks the resemblance to a warbler being so close that some observers, anyhow momentarily, can confuse the songs of the two species.

The next variation was immediately described by H. G. Alexander who, with my wife, was watching from an upper window, as being more like the song of the Yellow-hammer (*E. citrinella*) without the final "cheese," but it was clearly separable, unlike the "rare variant" referred to in *The Handbook*. Finally we were given another change of pitch, to an altogether shriller song that reminded me of the trilling of a grasshopper. This "insect" variant, too, I have often heard before. In fact I think that there are various intermediate types of song that link together the four that I have described.

G. BERNARD GOOCH.

Display of House-Sparrow.—On June 28th, 1949, just after sunset, I observed this display of a pair of House-Sparrows (*Passer domesticus*), which took place on the roof of a two-storeyed house in Co. Dublin, Ireland.

When first noticed both birds were perched on the roof a few feet apart. The hen suddenly flew down into the gutter. She appeared to be having spasms of violent trembling. Almost immediately the cock flew down into the gutter and faced the hen who, apart from continuing to tremble, did not take any further active part in the display. The cock then sprang right over the hen four times, from one side to the other. Coition followed. After a brief interval the cock commenced to jump backwards and forwards over the hen, the performance ending as before, with coition.

The birds then flew off together. Throughout the display one of the birds emitted an almost continuous low, churring note. No other birds were present.

W. E. SHAW-BURGESS.

Flock of Sky-Larks singing on ground.—While walking round Gladhouse Reservoir, Midlothian, on March 11th, 1951, I became aware of a peculiar noise, rather similar to that obtained by holding a sea-shell to one's ear. This proved to emanate from an outlying section of a flock of at least a thousand Sky-Larks (*Alauda arvensis*). Well over one hundred of these birds were keeping up a very quietly murmured song on the ground, and the combination of so many voices produced a very impressive volume of sound though it bore no resemblance to the bird's normal tuneful song.

A week before this record was made Sky-Larks had been abundant on the surrounding moorland, where they had obviously taken up territory. During the intervening week, however, there had been hard frost and several falls of snow, and on March 11th the breeding-grounds were completely deserted. It is a reasonable inference that this large flock was at least partly composed of the local breeding stock, and the presence of these birds, who had

already started their breeding cycle, would probably account for the volume of song in the flock. A rapid thaw had just set in and this would probably have the effect of stimulating song still further.

D. G. ANDREW.

Richard's Pipit in Monmouthshire.—Mr. G. C. S. Ingram has sent us full details of a Richard's Pipit (*Anthus richardi*) which he saw at Peterstone Wentloog, Monmouthshire, on September 26th, 1951, a day when a big immigration of pipits was very apparent in the morning. Amongst large numbers of Meadow-Pipits (*A. pratensis*) was one which appeared to be at least 25% larger, resembling a small, slim, warm-coloured thrush. Good views were obtained, and in addition to characteristic plumage details the bird's erect carriage was noted.

Courtship-feeding of Meadow-Pipit.—Dr. G. Beven informs us that near Rhayader, Radnorshire, on May 23rd, 1949, he watched a pair of Meadow-Pipits (*Anthus pratensis*) feeding together and saw courtship-feeding take place on two occasions. Again, at Seahouses, Northumberland, on May 9th, 1952, Dr. Bevan saw one adult with food in its bill approached by another, which perched beside it with fluttering wings. After the first bird had fed it, the latter flew off, but returned a few moments later and was fed a second time. A record has already been published (*antea*, vol. xlv, p. 408) of behaviour resembling courtship-feeding in autumn.

Great Tit "snow-bathing".—Mr. W. B. Yapp reports a case of a Great Tit's (*Parus major*) bathing in powdery snow in January, 1951. Records of similar behaviour in three other species, including Blue Tit (*P. caeruleus*) have already been published (*antea*, vol. xlii, p. 23; xlv, p. 407).

Alternative song of Great Tit.—In Derby and some Trent Valley parishes a Great Tit (*Parus major*) song quite distinct from the "saw-sharpening" (series of "see-chu" components) is commonly heard in the months of March, April and May. The most usual phrase of this metallic-toned song consists of three



JAN FEB MAR. APR MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

"sir-zink" components with an added "sir" note. The "zink" is accented and higher pitched than the "sir" note. Series of from two components up to "sir zink⁹, sir" are fairly common. Longer phrases are rarer, but I have recorded "sir-zink¹³"; "sir-zink¹⁹, sir"; and a remarkable song, including rapid series of 30, 32, 39 and 44 components. Occasionally a rapid sibilant note is heard between the notes of the normal component. I have not yet heard a "sir-zinking" Great Tit change to "saw-sharpening."

or vice versa.

The chart shows the days—not occasions—on which “sir-zinking” was heard in six years. All are south Derbyshire records apart from the two days in July which refer to Jersey.

DEREK C. HULME.

Blue Tit carrying nesting material in autumn.—We have received a report by Mr. D. J. Simkin of a Blue Tit (*Parus cæruleus*) which made five journeys, spread over three hours “each time carrying feathers, dead leaves and grass into a nesting box in which it subsequently roosted.” The incident occurred at Walsall, Staffs., on November 4th, 1951, and may be compared with a report (*antea*, vol. xlv, p. 409) of similar behaviour by a Marsh-Tit (*P. palustris*).

Blue Tit eating putty.—The Rev. J. E. Beckerlegge informs us that on four occasions at the end of October, 1951, a Blue Tit (*Parus cæruleus*) was seen to peck vigorously at, and presumably to eat, fresh putty round the windows of Treverbyn Vicarage, St. Austell, Cornwall. Similar behaviour by Starlings (*Sturnus vulgaris*) has already been recorded (*antea*, vol. xlv, p. 385).

Great Grey Shrike hovering.—With reference to the previous note on this subject (*antea*, p. 30), the Rev. G. W. H. Moule has pointed out that a reference to hovering by the Great Grey Shrike (*Lanius excubitor*) does in fact appear in *The Handbook* (vol. i, p. 281), and we apologise for overlooking this point. Further evidence of the habit has been supplied by the Rev. G. W. H. Moule and Mr. R. H. Ryall, both of whom recorded it on quite different occasions in the famous “Berkhamsted Grey Shrike.” More recent cases have been reported to us from Lincolnshire, April 8th, 1951 (S. A. Cox) and Sussex, January 19th, 1952 (F. Penfold).

Woodchat Shrike in Leicestershire.—From October 29th to November 3rd, 1950, an immature shrike frequented the gardens of a group of houses at Braunstone, on the outskirts of the city of Leicester, and was observed by G. A. Todd and C. W. Holt; the latter also made a cine-film in colour. It was described as being about as big as a Skylark (*Alauda arvensis*); the upper parts were greyish-buff, closely barred with crescentic darker brown, and the rump was light buff-grey. Tail and upper tail-coverts appeared uniform dark grey-brown except for narrow buff edge and more noticeable buff-cream terminal band on tail. Primaries, secondaries and median coverts were dark grey-brown with well marked warm buff edges and tips; primary coverts were dark brown and lesser coverts mottled light grey and brown. The underparts were light greyish, barred all over darker grey, and there was a lightish patch on the scapulars. The most striking feature of the bird was a clearly defined white wing-patch.

The bird seemed to be an immature Woodchat Shrike (*Lanius senator*) from all characters except the wing-patch, which caused great doubt as no ornithologist consulted had any experience of such

a wing-patch in an immature bird of this species, nor was there any reference to it in the literature. The record was therefore submitted to M. Georges Olivier, the French authority on the shrikes. In view of its general interest, a translation of his report is given :

"From examination of the photographs my immediate impression was that the bird was an immature *Lanius senator*. I then studied the written notes and sketches, which confirmed my impression for the following reasons :—

1. *Size* : With different proportions the size of a lark and this shrike are about the same.

2. *Colour* : The colours, indicated in the notes by Mr. Holt and Mr. Todd, as well as on the sketches, correspond to those of *L. senator*, even bearing in mind that there are very wide variations of colour in the young of this species. This applies even to birds hatched from the same clutch of eggs.

L. collurio must be ruled out, because its general colouration is quite different. The rump of the young *senator* is whitish or greyish-white (which is never the case in the young *collurio*). The scapulars are always very visible in *senator*, forming a whitish or greyish-white zone much paler than the rest of the plumage. This characteristic does not occur in *collurio*. In addition the tail pattern is different, the creamy part being larger in *senator* than in *collurio*.

L. minor in immature plumage has a yellowish colour, and sometimes sandy yellow. It never has the light patch on the scapulars.

L. excubitor can be eliminated, because of its larger size and its lack of the light patch on the scapulars.

3. *Vermiculations* : In the young *senator* these are dark, and very close, giving to the young birds an added characteristically closely mottled appearance. In *minor* these marks are more widely spaced.

4. *Wing-bar* : I believe that the chief confusion has arisen because the bird observed by Mr. Holt had an abnormally accentuated wing patch. In young *senator* observed in September I have already noticed wide differences in the "importance" of the wing-bar (and also on the scapulars) in terms of the visibility, but I have never seen specimens in which the wing patch was quite as strongly marked as on the Leicester bird. I should add that I have never seen young *senator* after September in France, Spain or North Africa, though I have seen them in June. It is possible that the Leicester bird had already begun to moult when observed. . . ."

It is the first Woodchat Shrike recorded for Leicestershire.

R. A. O. HICKLING.

Late Spotted Flycatcher in Kent.—Mr. M. L. R. Romer reports that he saw a Spotted Flycatcher (*Muscicapa striata*) at Littlestone-on-Sea, Kent, on November 3rd, 1951.

Willow-Warblers feeding on surface of water.—In a note (*antea*, p. 31) Mr. G. Rowbottom reported Willow-Warblers (*Phylloscopus trochilus*) picking food off the surface of a pond. Similar behaviour has been reported by J. R. Laundon who watched several of a party of Willow-Warblers near Corby, Northants., on May 14th, 1951, "dart down from a very low perch and skim over the surface of a pond apparently to take a flying insect." Mr. F. K. Cobb reports birds at Wolverston Park, Suffolk, on April 30th, 1951, "settling on pond-weed and slime, which was insufficient to bear their weight, maintaining their balance by rapidly fluttering wings and taking quick pecks at the surface."

Moustached Warbler in Kent.—On the morning of April 14th, 1952, near Cliffe in N. Kent, Messrs. L. C. Batchelor and R. Hutchings watched a bird for about a quarter of an hour, which they came to the conclusion was a Moustached Warbler (*Luscinia melanopogon*) after taking plumage description and comparing their notes with *The Handbook*. Later in the day R. H. took us and Mr. J. S. Wightman to see the bird, which was watched for half an hour under perfect conditions. It was still in the same dyke, which was bordered with low sedge and thick tussocks of grass. A keen wind was blowing from E.N.E. and the bird spent most of its time sheltering as far as possible in the sedge and the low banks of the dyke. For the previous week the wind had been persistently from a southerly quarter.

The following plumage details are compiled from our joint notes.

The most conspicuous features from a side view were a marked pure white superciliary stripe from the base of the bill to the nape, where it stopped clearly and did not merge with the plumage of the neck. Below this stripe, a distinct black line ran from the bill to the eye, while over the stripe the sides of the crown showed very black. Behind the eye the black was more in the form of a small smudge which did not extend as far back as the superciliary stripe. The chin, sides of neck and underparts were white, the breast being very faintly suffused with yellow or buff and the white being most pronounced on the chin, throat and belly. The whole of the lower plumage was without any streaks or spots.

Though from a side view the crown appeared to have a black band along each side, when seen from above it was apparent that the whole of it was blackish, slightly paler in the centre. Nape and mantle were olive-brown and streaked like a Hedge-Sparrow (*Prunella modularis*), while the lower back and rump were a clear rufous colour which is difficult to define more exactly without a colour chart. The end of the tail was rounded and brownish black in colour. The under-tail coverts and flanks were a warm buff, in marked contrast with the white underparts. Blackish marking on the closed wing was set off by tawny lines

running diagonally across the primaries. Bill and legs were pale brown and iris dark.

No Sedge-Warblers (*Acrocephalus schænobænus*) were available for comparison, but the appearance of this bird was strikingly different in the marked whiteness of the superciliary stripe and of the underparts, contrasting with the black of the crown, and the general dark appearance of the upper plumage when the wings were at rest. The white superciliary stripe and dark crown from a side view were very reminiscent of the head of a cock Whinchat (*Saxicola rubetra*). Equally striking in flight were the brightness and greater extent of the rufous area on the lower back and rump compared with a Sedge-Warbler, and the gentle curve of the end of the tail. All these features were clearly noted at the time, as at one stage the bird was watched through a telescope (25-40 ×) in good visibility at a range of about ten yards on the side of a gate crossing the dyke. It was also repeatedly observed as it sheltered under the lee of the bank. At times it took refuge in clumps of sedge and grass, from which it was flushed at our feet, permitting a clear view of the back and tail as it flew low and direct over the water before switching suddenly into cover.

An opportunity was taken the following week to study Sedge-Warblers under the same conditions, and the absence of a marked contrast between upper and lower plumage was most apparent. The eye-stripe appeared *pale buff* as distinct from *pure white*, the rufous area on the rump was less striking and smaller in extent, while the tail was noticeably tapering due to the length of the central tail feathers. We are indebted to Col. Meinertzhagen for giving R. C. H. the opportunity to examine skins of the Sedge- and Moustached Warblers, which could clearly be separated on the characters discussed above, though in the live bird they are more readily apparent. The upward flicking of the tail, which is said to be a characteristic of the Moustached Warbler, was not seen, but this is not surprising as at all times the bird was obviously inconvenienced by the wind. The only note heard was a soft 'tack' on one occasion.

After comparison of the two species, alive and dead, we are perfectly satisfied that the bird seen was a Moustached Warbler, which appears to be the first record for Kent. Full credit for the initial identification must go to Batchelor and Hutchings.

E. H. GILLHAM AND R. C. HOMES.

Greenish Warbler in Norfolk.—On September 6th, 1951, there were some 20 Willow-Warblers (*Phylloscopus trochilus*) in a small clump of coniferous and deciduous trees near the western end of Blakeney Point, Norfolk. We watched them for about an hour (1400—1500 hours G.M.T.) and, after a while, noticed that one had a pale wing-bar. It fed on outer branches and we had it under intermittent observation for ten minutes. The range was c.12 yards, binoculars 7 × 50 and 8 × 30, sky overcast, light fair

and "all-round."

The bird disappeared several times, but was picked out again immediately it came back into view, for it "looked different" from the Willow-Warblers: in general it was paler and browner. The size was about as Willow-Warbler. It was certainly not "distinctly larger" (as K. Williamson describes Eversmann's Warblers (*Ph. borealis*) seen at Fair Isle in 1950 (*antea*, vol. xlv, p. 121), leg colour pinkish-brown (as Willow-Warbler again), behaviour similar too, possibly slightly more active. The differences in appearance, compared with Willow-Warblers present, were as follows:—

- (i) Single wing-bar, easily visible through binoculars on both wings, but not long or bright. Colour not determined, except that it was pale.
- (ii) Superciliary stripe narrower than with Willow-Warbler, but nevertheless brighter, paler, contrasting markedly with dark eye-stripe, and altogether more prominent.
- (iii) Underparts paler than the Willow-Warbler, almost whitish on belly, otherwise washed very pale yellow, and tinged brown or grey-brown on sides of breast. This latter feature noticed independently by each of us.

We watched the trees carefully for about half-an-hour the next day (c. 1400 hours G.M.T.) but could not find the bird.

P. W. P. BROWNE AND ARNOLD HITCHON.

[Mr. Kenneth Williamson states that the distinctive points noted by the observers are diagnostic of the Greenish Warbler (*Ph. trochiloides*), particularly as Willow-Warblers were present for comparison.—EDS.]

Eversmann's Warblers in Northumberland and Norfolk.—On September 9th, 1951, I saw a small bird in a sycamore spinney on Holy Is., Northumberland, which had a superficial resemblance to a Willow-Warbler (*Phylloscopus trochilus*), but bore a distinct pale transverse bar on its closed wing. It was therefore examined very carefully. The following description is as detailed as could be obtained:—

Crown, mantle and rump uniformly greenish-brown. Stripe, from base of upper mandible over eye to hind border of ear-coverts, pale creamy white, sharply demarked and bounded below by an olive brown stripe from gape, across lores, closely embracing the eye and passing backwards for the full length of the pale stripe. Under-parts pale greenish-yellow, paler on throat and belly being there scarcely more than off-white. Wings and tail rather darker than mantle, greenish rather than brownish. Distinct pale, creamy-white transverse bar on wings arising from pale tips to greater coverts. No second pale bar visible. Legs brown; bill brown; eye dark.

The general impression was of a bird about the size of a Willow-Warbler, if anything rather larger and slimmer, with a much more distinct pale superciliary stripe and with a pale wing bar. From

below the wings seemed larger relatively to the tail than in the Willow-Warbler but not so much so as in the Wood-Warbler. (*Ph. sibilatrix*). It was completely silent. It moved about among the foliage much as does the Willow-Warbler but at times it sat motionless watching for insects which it sometimes took on the wing in a hovering, fluttering flight. It constantly half-opened its wings and it slightly raised its crown feathers at times. Once it descended to the ground.

The bird was seen by Mr. A. H. White on September 11th, and by Mr. and Mrs. White on September 12th, and their description of the bird is as follows :—

“ It was a slim bird, slightly larger than a Willow-Warbler.

The upper-parts were greenish, wings and tail being dark green ; pale creamy eye stripe ; under-parts very pale yellow or white ; upper breast with no visible streaks ; greater coverts and primaries tipped very pale yellow or white ; secondary webs showed pale yellow or white ; legs, bill and eye dark in colour. In behaviour it was silent and shy. On quiet approach it would always fly to trees more remote, although already in high canopy. On several occasions it lifted its tail and half opened its wings.”

These descriptions appear to fit Eversmann's Warbler (*Ph. borealis*). N. W. CUSA.

While working the suæda bushes near Blakeney Point, Norfolk, on September 21st, 1951, a *Phylloscopus* was disturbed, and subsequently a satisfactory view was obtained. The following features were noted. The size appeared slightly larger than a Willow-Warbler (*Ph. trochilus*). A prominent sulphur-yellow superciliary stripe was broadest above the ear-coverts and extended almost to the nape. Below this was a dark streak in front of and behind the eye. The crown was olive-green while the mantle was dark brownish-green with the wings and tail dark brown. Across the former a narrow but noticeable pale yellow bar was observed. There was no contrast in colour between the rump and mantle. Although the whole of the under-parts were not seen thoroughly they appeared whitish on the sides. The legs were brownish and paler than the bill which was noticeably long.

This description corresponds with that of an Eversmann's Warbler (*Ph. borealis*). Some of the features mentioned above were also confirmed by O. D. Hunt, C. M. James, P. le Brocq and A. W. Wolton. L. P. ALDER.

[We have submitted the above notes to Mr. Kenneth Williamson who states that in his opinion the bird observed by Mr. Cusa was a bird of the year, as “ wings greenish, rather than brownish ” suggests little wear ; the notes by Mr. and Mrs. White confirm this. He adds that raising the crown feathers into a little crest is a good field character. He suggests that the Norfolk bird was an adult in worn plumage, and points out that the eye-stripe as described, coupled with the wing-bar, is diagnostic. Mr. Alder's record was

enclosed in square brackets in *Wild Bird Protection in Norfolk*, 1951, p. 27, as, at that time, it was uncertain that it was sufficiently authenticated. An Eversmann's Warbler was identified at Fair Isle on August 27th.—EDS.]

Aquatic Warblers in England in 1951.—We have received several reports of Aquatic Warblers (*Acrocephalus paludicola*) in England in August and September, 1951. The most unusual of these is Mr. J. Cameron Coulson's record for South Shields, the species being previously unrecorded in Co. Durham. Full supporting details of this observation have been supplied to us and an account of the occurrence has already been published by Mr. G. W. Temperley as an appendix to his *History of the Birds of Co. Durham*. Others were seen at approximately the same time further south, where small numbers are likely to occur annually. Records received include :—

CO. DURHAM.—One, Frenchman's Bay, South Shields, August 28th (J. Cameron Coulson and E. White; also seen by Dr. H. M. S. Blair and F. G. Grey). (*vide, Northum., Durham, etc., Ornith. Report for 1951, p. 116.*)

NORFOLK.—One, Blakeney, September 8th (Miss C. James, C. C. Rose and W. Wince). (*vide, Wild Bird Protection in Norfolk, 1951, p. 27.*)

MIDDLESEX.—One, Perry Oaks sewage farm, August 25th—26th (A. Gibbs, H. C. Holme, I. T. C. Nicholson and C. A. White).

KENT.—One, near Dungeness Lighthouse, September 5th. (G. E. Manser, B. S. Milne and K. H. Palmer.)

SUSSEX.—One, Pett Level, September 4th. (R. Cooke.) (*vide, [Hastings and E. Sussex Nat., 1951, p. 14.]*)

Lesser Whitethroat in Inverness-shire.—Mr. Geoffrey Taylor informs us that on June 14th, 1951, he heard the song of a Lesser Whitethroat (*Sylvia curruca*) at the head of Loch Morlich, Inverness-shire. This seems to be exactly the same locality as the one where the late B. W. Tucker heard the song ten years previously (*vide, antea*, vol. xl, pp. 375-376). Mr. Taylor states that he heard the song distinctly several times, but had only a brief glimpse of the bird in flight.

Mistle-Thrush nesting in Monkey-Puzzle tree.—Mrs. W. B. Colthurst reports that in three out of the last five years a pair of Mistle-Thrushes (*Turdus viscivorus*) has nested in a Monkey-Puzzle tree at Bridgwater, Somerset (*cf., antea*, vol. xlv, p. 287).

Song-Thrush using same nest for successive broods.—Mr. E. Cohen reports that the nest of a Song-Thrush (*Turdus ericetorum*) at Sway, Hants, from which young flew on April 19th, 1951, contained one egg on April 26th and five young were eventually fledged. Mr. R. G. Adams reports from Lympstone, Devon, also in 1951, a case of the same nest being used three times. A new lining was added for the second clutch, some new straws and a fresh lining for the third. In this case the third brood was unsuccessful, probably owing to an accident to the female.

Ring-Ouzel nesting on inhabited house.—Mr. Maurice Larkin has reported that on June 6th, 1951, he found a female Ring-Ouzel

(*Turdus torquatus*) feeding young in a nest built in the spouting of a large inhabited house near Tomatin, Inverness-shire. The nest was partly sheltered by overhanging eaves.

Hoopoe in Anglesey.—Mr. C. F. Tunncliffe reports that a Hoopoe (*Upupa epops*) was seen in the neighbourhood of the Cefni Estuary, Anglesey, on September 26th, 1951, and on four days in October. He saw it on October 15th, but it was not seen subsequently.

Kingfisher nesting in post.—Mr. C. R. Tubbs informs us that in 1948 he examined the nest of a Kingfisher (*Alcedo atthis*) in a wooden post in a pond on Farlington Marshes, near Portsmouth, Hants. The post was about seven feet high with a diameter of about one foot, and the nest was in a split which the birds had somewhat enlarged. The entrance to the nesting hole was a narrow slit about ten inches in height, and the floor of the nest was at least a foot below the entrance. It is believed that this site was in use for some years before 1948, but after that year the post became so rotten that it was abandoned.

Display of Green Woodpecker.—Mrs. S. G. Williams has sent us an account of a display by two Green Woodpeckers (*Picus viridis*) seen near Wellington, Somerset, on January 19th, 1952. The two birds perched facing each other and bowed or swayed from side to side; whatever one bird did the other copied. In this respect the display observed by Mrs. Williams resembles some previously described (e.g., *antea*, vol. xxxvii, p. 96), but in the end these two birds flew at one another and tumbled fluttering to the ground, where they separated and flew off.

Great Spotted Woodpecker perching in low bush.—Mr. W. D. Ryder has supplied a further example (*cf.*, *antea*, vol. xlv, p. 324) of a Great Spotted Woodpecker (*Dendrocopus major*) perching in a low bush: on February 5th, 1952, he saw one perch in a low hawthorn bush, about six feet from the ground, in a garden at Jesmond Dene, Newcastle-on-Tyne. A more remarkable incident, which may be compared with behaviour already recorded (*antea*, p. 33) of a Lesser Spotted Woodpecker (*D. minor*), has been reported by Mr. Michael Ward who saw a Great Spotted Woodpecker clinging to a dead thistle, about a foot from the ground, and tapping at the stem; this took place near Ilford, Essex, on March 3rd, 1952.

Cuckoo laying inside a building.—On May 4th, 1952, Mr. R. R. Sparkes unlocked his workshop at Dunster, Somerset, and found a Cuckoo (*Cuculus canorus*) inside.

Knowing that a Pied Wagtail (*Motacilla alba yarrellii*) had a nest on a shelf there he inspected it, and found that it contained one Wagtail's egg and the egg of a Cuckoo. He kindly showed me the nest on May 7th, when, in addition to the Cuckoo's egg, there were 3 Wagtail's eggs.

The Wagtail reached its nest by entering through a wide slatted

wooden grating above the door. The nest was placed about 8 inches back from this, and there can be no doubt that the Cuckoo had reached the nest in the same way.

I can find no records of a Cuckoo laying *inside* a building.

A. V. CORNISH.

Fledging period of Eagle- and Snowy Owls.—*The Handbook* quotes the late A. H. Cocks as authority for the fledging period of the Snowy Owl (*Nyctea scandiaca*), when in fact the period given, of 51-57 days, refers to the Eagle-Owl (*Bubo bubo*). A. H. Cocks wrote a letter dated March 21st, 1914, to the late F. C. R. Jourdain in which he clearly describes the breeding of his Eagle-Owls in captivity, mentioning this species by name. This letter has survived loose in F. C. R. J.'s original notebooks on breeding biology, where its content has been copied erroneously into the Snowy Owl section, from which it was presumably extracted for *The Handbook*.

So far as I am aware the fledging period of the Snowy Owl is not known, and Cocks' statement under this species should be transferred to the Eagle-Owl. C. Gugg's statement that young Eagle-Owls leave the nest at 5 weeks is now supplemented by Cocks' statement that the young first fly at 51-57 days.

JOHN GIBB.

[I have seen the letter and notebooks, and have no doubt that Mr. Gibb is correct.—W. B. A.].

Hobbies pursuing Green Woodpeckers.—Attacks by Hobbies (*Falco subbuteo*) on Green Woodpeckers (*Picus viridis*) have been recorded previously (*vide, antea*, vol. xlv, p. 411). The Rev. G. W. H. Moule informs us that on September 3rd, 1949, in Dorset, he saw two Hobbies each pursuing a loudly shrieking Green Woodpecker—four birds in all. The Hobbies were flying almost side by side, and the chase ended when the Woodpeckers reached some scattered pines and escaped.

Kestrel bathing in wood ash.—Mr. Geoffrey Boyle informs us that on April 26th, 1952, he saw a male Kestrel (*Falco tinnunculus*) fly down to a heap of wood ash and "bathe," shuffling round in small circles, breast to ground, and flapping its wings after the manner of a Common Partridge (*Perdix perdix*). Kestrels have been recorded taking baths in dust, both in the wild and in captivity (*antea*, vol. xiv, pp. 240 and 264). In dryer parts of the world, this and other species of falcon and hawk can commonly be seen dusting.

Common Buzzard hunting a hare.—Mr. R. G. Sandeman has described to us how he watched a Common Buzzard (*Buteo buteo*) hunting a hare on the slopes of the Sugarloaf mountain, Breconshire. The chase went on for at least ten minutes, the Buzzard following all the twists and turns of the hare and even driving it out of a bush in which it had taken shelter. The hare seemed

dazed, but the Buzzard seemed to be playing with it rather than attempting a kill.

Spoonbill in Anglesey.—With reference to the record (*antea*, vol. xlv, p. 412) of a Spoonbill (*Platalea leucorodia*) in Anglesey, Mr. Colin Matheson informs us that this was not the first record of the species on the island, one having been seen on May 10th and June 1st, 1924 (Caradoc and Severn Valley Field Club's *Record of bare facts for the year 1924*, p. 28). Mr. C. F. Tunnicliffe reports that one was seen on October 15th, 1950, on the Foryd estuary, Caernarvonshire, and on the following day at the Cefni estuary, Anglesey.

Bittern "freezing" when standing on open ground.—I can add a further case to the one already reported (*antea*, p. 33) of a Bittern (*Botaurus stellaris*) "freezing" on open ground. On February 5th, 1947, at Kelleythorp, E. Yorks, I surprised a Bittern in the open between a river and a wood. It "froze" and was wonderfully conspicuous against the snow that covered the ground. Advancing slowly I was only 12 yards from it when it flew off. As it rose it uttered a thin, sibilant, high-pitched "zeez," not unlike a Blackbird's (*Turdus merula*), though considerably sharper. Nothing like this note is mentioned in *The Handbook*. J. H. BARRETT.

Flight-behaviour of female Sheld-Duck.—Sheld-Duck (*Tadorna tadorna*) occur regularly in Langstone Harbour, Hants, both as breeders and non-breeders. I have noticed that throughout April, May, June and July the ducks have a habit of carrying the neck almost fully drawn into the body whilst in flight, after the manner of the Heron (*Ardea cinerea*). This habit seems not to be used by birds flying singly, but only when in company with a drake. C. R. TUBBS.

Wigeon summering in Middlesex.—In connexion with the notes (*antea*, vol. xlv, pp. 206, 391) on Wigeon (*Anas penelope*) summering in southern England, Mr. C. A. White sends particulars of observations at King George VI reservoir, Staines, Middlesex, where varying numbers of Wigeon were seen on May 20th and 27th, June 24th and July 1st, 1951. The maximum number was three pairs. This is the first occasion on which Mr. White has seen Wigeon throughout the summer in this area.

Unusual perches of Cormorants.—With reference to the note (*antea*, p. 35) on a Cormorant (*Phalacrocorax carbo*) perching on a cable, Mr. R. H. Winterbottom writes that on January 15th, 1951, at Cliffe Marshes, Kent, he saw a Cormorant resting and drying its wings on the sail of a wind-pump. Mr. J. E. Milne reports a more acrobatic feat. At Poole Harbour, Dorset, in February, 1952, he saw a Cormorant sidle up a mooring wire, about 1 inch in diameter, attached to the stern of a disused landing craft. The wire was about 20 to 25 feet long and the bird took about 15 minutes to reach the top, some 10 feet above the surface of the water. It

had considerable difficulty in maintaining its balance and nearly fell off several times.

Gannets feeding on shore.—Mr. G. H. Hunt informs us that on May 11th, 1950, at Blakeney Point, Norfolk, he saw two Gannets (*Sula bassana*) standing on the shore and dibbling for sand-eels in two inches of water.

Gannets associating with Basking Sharks and making shallow dives.—During the first week of September, 1949, and the third week of August, 1950, I watched many Gannets (*Sula bassana*) feeding close in to the cliffs of the island of Canna. They were abundant along the north coast of the island, but very few were seen along the south. They were very often seen in association with Basking Sharks (*Selache maxima*). The sharks would appear, usually one to three in number, quite suddenly, having travelled under water and then surfaced to feed, as a rule in a small bay. They would swim slowly in circles for several minutes and then the Gannets would begin to congregate. Some Gannets were always to be found along the north coast, but often only half a dozen. Soon quite considerable numbers would be gathered around the sharks; I have only one precise record of numbers and that is for August 22nd, 1950, when there were about 80 on the water and 30 diving. This was a typical flock. These large gatherings were only found in connexion with the sharks. The sharks, however, were frequently seen along the south coast, but no gatherings of Gannets were seen there. No other species were seen to join in the gatherings. Juvenile Gannets have been recorded accompanying porpoises (*antea*, vol. xlv, p. 87), but no juveniles were seen in these gatherings; indeed no immature Gannets were seen at all during these visits. However, schools of porpoises were frequently seen, often two or three times a day, but they were never accompanied by Gannets. They were, as a rule, travelling rapidly and probably not feeding, whereas the Basking Sharks were more or less stationary. It is well known that the Basking Shark is a plankton feeder, and the plankton is probably equally attractive to many fish that are suitable food for Gannets. Similarly, *feeding* porpoises will probably attract Gannets.

Although the majority of dives were typical plunges, many birds were often seen performing a series of shallow dives. Initially the bird would make a typical plunge. After about five seconds it surfaced and would then rest on the water for a few moments, shuffling its wings. It would then take off with a run and after flying about 40 feet would take a shallow header from a height of only 2-3 feet. During this dive it remained close to the surface, its under-water movements being easy to follow and covering a distance of about eight feet. This dive was followed by a pause and then repeated often two or three times in quick succession. It has been suggested (*antea*, vol. xli, p. 26) that these shallow

dives are the result of competition with gulls. In this instance, however, there appeared to be no competition either with gulls or other Gannets; I could not see whether any food was taken, but suspect that the birds spotted fish from their low altitude.

A. J. BRUCE.

Leach's Fork-tailed Petrel on Whalsay, Shetland.—At a certain part of the island of Whalsay, Shetland, over a period of years during the breeding season, I have found numerous portions of Storm-Petrels (*Hydrobates pelagicus*), the remains of meals made by cats. These remains are normally composed of a pair of wings, a pair of legs and feet and the tail-feathers. In 1950 I counted the remains of 28 specimens, all Storm-Petrels. In 1951, over a period of three weeks from July 27th, the duration of my visit to the island, I counted the remains of 51 Storm-Petrels and the two birds I am now to describe. On August 5th, amongst other remains, I found a pair of wings and legs larger than those of the Storm-Petrel, and again on August 7th I found another large pair of wings but only one leg. The length of the first pair of wings is 160 mm., and of the second pair 163 mm., while the measurements of the three legs and feet are all alike, tarsus 24 mm., and middle toe with claw 26 mm. The colour of the wings is similar to those of the Storm-Petrel, except that the coverts are very pale as is typical of Leach's Fork-tailed Petrel (*Oceanodroma leucorhoa*). Actual nesting has not so far been established. SAMUEL BRUCE.

[Mr. G. T. Kay adds that he and Mr. G. W. Russell have examined the remains and confirmed Mr. Bruce's identification.—EDS.].

White-billed Northern Divers in Yorkshire, Angus, East Lothian and Shetland.—On January 30th, 1952, a White-billed Northern Diver (*Colymbus adamsii*) was found dead on the sands at Scarborough, Yorkshire, by Mr. Eric Sigston, and was brought to me for identification. The bird had obviously died through the fouling of its feathers with oil, and it was in a terrible condition when found. It was quite impossible to preserve the whole skin, but the head and feet were kept, and photographed.

It was the beak which immediately attracted attention, as it was of the white colour characteristic of this species, and also had the straight line of the upper mandible, and upcurved tilt of the lower. The white shaded to a dark horn colour at the base. The feet and tarsi were dark on the outside, and pale on the inside. The webs were dark around the edges and pink in the centre, whilst the tops of the toes were pale grey. The bill was broken at the tip of the upper mandible, and the 2nd and 3rd primaries were missing from each wing, presumably due to moulting. The bird was 33 inches in length from tip of bill to tip of tail. Most of the body feathers were coated with oil but it was noted that the white spots on the upper-parts were largely concentrated on the wing-coverts and secondaries, with a few on the scapulars, the mantle

being unspotted.

In *The Handbook* only two records of this species are admitted as authentic, and no mention is made of the specimen seen in Scarborough Harbour on February 29th, 1916, by the late W. J. Clarke (*vide. The Naturalist*, 1916, pp. 217-219).

In support of this record, I quote from W. J. Clarke's personal notes which are at present in my possession : " During a storm in the last week of February, 1916, many birds came into the shelter of the piers (Scarborough Harbour) including a specimen of the White-billed Northern Diver (*Colymbus adamsii*). I first saw this bird within 15 yards of the pier and had a good view of it for about an hour on February 29th. On March 1st, the bird was still there and I examined it closely with binoculars at a distance of about 30 yards. The massive bill, upcurved and of a pale yellowish-white colour, and the large white spots on the back, distinguished the species. The feathers of the back and wings were not fringed with grey, hence I concluded it would be an adult. Note—the white spots on the back were really greyish-white—much larger than the similar spots on *C. glacialis* (= *immer*). It was a very large bird and sat higher out of the water than the other divers. I had the opportunity of comparing it with Red-throated Divers (*C. stellatus*) close by. When it dived it seemed to put down its head and sink quietly under water with much less disturbance than that made by the much smaller Red-throated Diver." A. J. WALLIS.

On February 10th, 1952, a diver was brought to me in a badly oiled and exhausted condition. It had been found on the shore at Sandsend, near Whitby, Yorks., during cold wintry weather, two days after a strong N.W. wind. Suspicions of its identity were raised by the colour and shape of the bill, and measurements showed that it was probably a White-billed Northern Diver (*Colymbus adamsii*). It was hoped that, after being cleaned and fed, it could be released. R. M. Garnett saw it the following morning, but it died a little later. Comparison with the skin at the Hancock Museum, Newcastle, confirmed the identification. It is interesting to note that the bird—an adult female—entirely lacked primaries and was apparently moulting from winter to summer plumage, although few feathers on the back had other than small, white spots. The skin is available for examination at the Museum, Whitby. The bird weighed 6 lb. 4 ozs. when first examined; its bill was a horn colour with a yellowish tinge, shading, on the top mandible only, to a dark grey-brown above and behind the nostrils. After a few weeks this colouring changed completely and could be described as white, shading to dark brown at the base of *both* mandibles. Its feet and tarsi were a dark grey-brown on the outside and pale grey-flesh on the inside, and on the webs. When the bird was alive, the last had a pinkish tinge. ARNOLD B. WALKER.

We have received very full details of these two records, including measurements and photographs, and a report by Mr. R. Wagstaffe

of the Liverpool Museum on his examination of the skins. Some mention of the measurements is made below, and one of the photographs, taken by Mr. Walker while the Sandsend bird was still alive, is reproduced on plate 84 (upper). Apart from these, however, there were two other occurrences of this species in early 1952, both in Scotland. Complete accounts of these records have been sent to us, but as they have already been published in *The Scottish Naturalist* (vol. 64, pp. 119-121), only the bare details are given here :

ANGUS. One, unsexed but adult, found badly oiled and dead at Monifieth, Angus, on February 24th, 1952, by Mr. G. B. Corbet. The remains of this bird were also later examined by Mr. R. Wagstaffe who states that, like one or perhaps both of the Yorkshire birds, this was moulting from winter to summer plumage. The bill was noted to be yellowish-white, shading to a horn colour at the base of the upper mandible, and blue-grey at the base of the lower. An excellent photograph of the bill of this bird, showing the shape characteristic of the species, is reproduced at natural size on plate 83.

EAST LOTHIAN. One, seen off-shore at Dirleton on February 24th, 1952, by Mr. Russell G. Thin.

The Scottish Naturalist (loc. cit.) also refers to the White-billed Northern Diver that was found dead at the head of Whiteness Voe, Shetland, on January 21st, 1946, by Mr. and Mrs. L. S. V. Venables (*antea*, vol. xl, pp. 112-113) and the adult in full plumage that the same observers watched at Weisdale Voe, Shetland, on June 8th, 1947 (*ibid.* p. 282), and goes on to state that Mr. and Mrs. Venables have three other Shetland records, as yet unpublished. These are :

May 21st, 1950, immature at Spiggie Voe.

April 24th, 1951, immature in Bay of Scousburgh.

June 8th, 1952, adult, Geo of Blovid, Levenwick (seen by Tom Henderson and others).

The Handbook admits only two records of this species, but there seems no reason why the late W. J. Clarke's record in 1916 should not be accepted. No discussion of this sight record appears in the late H. F. Witherby's files and the occurrence was presumably overlooked (*cf.* Witherby, *antea*, vol. xvi, pp. 9-12). With this and the Shetland records, as well as the others noted above, the number of British occurrences has risen to twelve.

It is of interest to note that two, and perhaps all three, of the birds found dead in early 1952 were already moulting from winter to summer plumage, even though two of them were found in the month of January. W. J. Clarke's bird at Scarborough in 1916 was obviously in the process of moulting, for diagnostically large white spots were present on the back of this bird towards the end of February. Tucker and Venables (*antea*, vol. xl, pp. 112-113) say of the bird picked up at Whiteness Voe in mid-January, 1946, that the "mantle and scapulars showed a few big white spots." Thus there is a certain quantity of evidence that this species begins

this moult even earlier than *The Handbook* suggests in saying that "very few moulting examples are available but appears to moult as in Great Northern" [=February-May].

Mr. Wagstaffe has supplied the following measurements taken from the remains of the Angus and the two Yorkshire birds in 1952 :

	Monifieth	Sandsend	Scarborough
Exposed culmen	95	92	93
Bill from nostril	79.5	75	*76
Height of bill at nostrils	26	25.25	27
Height of bill at angle gonys	22	21.5	22
Height of bill at base	27	26.5	27.5
Length of bill to feathers on side of maxilla	75.5	78	79
Greatest height of maxilla	17.5	17.5	19
Length of exposed mandible	93	96.5	*106.5
Height of mandible at gonys	10.5	11	11
Length of mandible from tip to gonys	49	50.5	54.5
Length of mandible to feathering on chin	—	80.5	86.5
Total length of mandible from tip to gape	—	125	141
Tarsus	—	91	101

All measurements are given in millimetres ; those marked * are lower than they should be, because the tip of the upper mandible of this bird was broken. The length of each bill from the nostril should be compared with the range given in *The Handbook* which is 60—80 mm., as against 53—70 mm. in the Great Northern Diver (*C. immer*).

THE EDITORS.

Flock of pigeons attacking Kestrel.—On December 6th, 1951, near the Guildhall, Portsmouth, I saw a flock of pigeons attack a Kestrel (*Falco tinnunculus*) hovering over a piece of waste ground. The flock, composed of domestic pigeons (*Columba livia*) and one or two Wood-Pigeons (*C. palumbus*) swooped at the Kestrel in a tight flock, the Kestrel side-slipping. After several attempts, however, the pigeons caught the Kestrel in their midst and gave it a severe buffeting. It did not appear to be able to escape and it was not until the flock of pigeons split up that it was able to do so.

C. R. TUBBS.

Large gatherings of Turtle-Doves.—Mr. C. F. Tebbutt has reported that on September 16th, 1949, at Great Staughton, Hunts., he counted 60 Turtle-Doves (*Streptopelia turtur*) perched on electric wires. Mr. I. Lemon saw about 200 on telegraph wires at Barnack, Northants, on August 2nd, 1951, and believes that there were many more feeding in corn below. Occasionally a member of this flock sang for a few moments. In both instances the birds seem to have been attracted by feeding grounds where Turtle-Doves do assemble in late summer, but the numbers recorded seem unusually high.

Black-tailed Godwit alighting on water.—On March 30th, 1952, after a heavy snowfall, I put up a Black-tailed Godwit (*Limosa limosa*) from the snow covered bank of one of the Pen Ponds, Richmond Park. It flew to and fro over the water for a minute

or two, apparently looking for a convenient place to land. I was then surprised to see it slow down over a party of Mallard (*Anas platyrhynchos*) in the centre of the pond, and alight deliberately beside them on the water (depth about five feet). Within three or four seconds it took off again without difficulty and finally alit in shallow water at the margin of the pond, where it remained for some time. Although it is known that waders can alight on water, observations seem to be infrequent. R. W. HAYMAN.

Two Common Snipe on one nest.—According to *The Handbook* incubation in the Common Snipe (*Capella gallinago*) is carried out by the female. In view of this an incident which I noted near Appleby, Westmorland, on June 6th, 1950, may be of interest. At 13.15 hours, in very hot sunshine, I went to examine the nest of a Snipe (c/3) on the top of a turnip stitch quite exposed to the sun. When in sight of the nest I saw two birds sitting on the eggs, head to tail. I watched them for about a minute before approaching closer and when I was within three yards of the sitting birds one left the nest, leaving the eggs partly exposed. The other bird "froze" on the nest and I left it sitting. The bird which left appeared to be an adult, but it was impossible to tell whether the two birds were a pair or two females. Neither bird was sitting when I visited the nest three hours later, but the eggs hatched successfully on June 11th. R. W. ROBSON.

Red-breasted Snipe in Lancashire.—On October 28th, 1951, on the Ribble Marshes we observed a Red-breasted Snipe (*Limnodromus griseus*). The bird was under observation for one hour and allowed us to approach until it was only 26 yards distant. The following observations have been compiled from the field notes of the observers.

In flight the bird appeared generally greyish, with a prominent white rump and back. A light trailing edge to the wing was conspicuous as was the heavy bill which was held at approximately 45 degrees to the horizontal.

Whilst on the ground the general colouration was brown. Other points recorded are as follows: crown, dark brown; greyish stripe above the eye; face lighter than crown; throat and breast a dusky brown; shoulders showing a faint reddish tint (E. H., D. J. L.); lower breast and belly fawnish, the flanks being faintly barred with darker brown; under tail-coverts, grey; wings mottled brown (as on those of the immature Ruff (*Philomachus pugnax*)); tail light brown with dark barring; eye, dark; legs yellowish-brown; bill black with small horn coloured area at the base.

The size of the bird was approximately as that of the Redshank (*Tringa totanus*), but stockier. The most conspicuous feature of the bird whilst resting was the long stout bill which was estimated to be half the length of the body. There was no noticeable thickening of the bill at the tip. Several times whilst feeding the complete

length of the bill was immersed in the mud. At one time the bird turned its head and preened the feathers on the rump quite effortlessly.

The bird was heard to utter "peep" and "peep peep" in flight which could be compared with the "kleep" of the Oystercatcher (*Hæmatopus ostralegus*). When flushed it gave a long trill of "peeps" similar to the "titter" of the Whimbrel (*Numenius phaeopus*).

It may be of interest to record that this particular bird had an injured right leg which could be seen dangling in flight.

The observations were made through $\times 20$ telescope and 10×40 binoculars, in good light.

We suspect this to be the Alaskan form (*Limnodromus griseus scolopaceus*) on account of the extremely long bill, but from *The Handbook's* brief description of this form we have not been able to check this thoroughly. The bill of our bird was as long as if not slightly longer than the bill of the bird in the photograph of this species in *Brit. Birds*, vol. xlii, plate 32, under which the form is not stated. (A. H., H. S., G. T.).

A. HARRISON, H. SHORROCK, G. TYRER, D. J. LOWE,
EDWARD HUYTON.

Winter habitat of Ruff.—With reference to Mr. K. D. Smith's remarks (*antea*, vol. xlv, p. 116) about Ruffs (*Philomachus pugnax*) in dry places in their winter quarters in Africa, it is perhaps worth recording that I encountered a large party on a dry plain at Mwanambuyu, in the Manoya District of Northern Rhodesia, on November 29th, 1940.

J. M. WINTERBOTTOM.

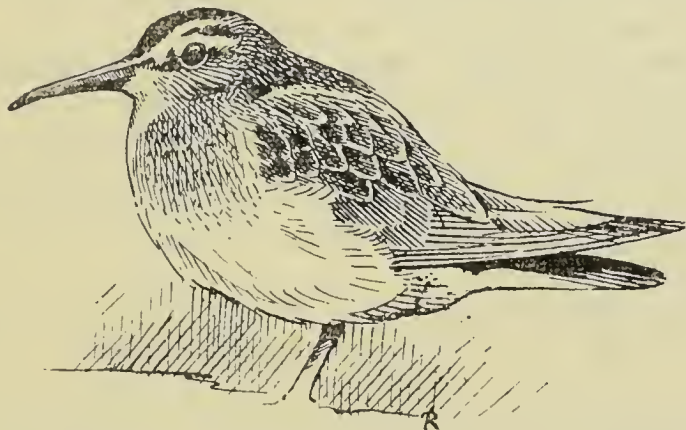
Broad-billed Sandpiper in Norfolk.—A Broad-billed Sandpiper (*Limicola falcinellus*) was identified at Cley, Norfolk, on June 5th, 1952. It was first seen by myself and Mr. W. Bishop, the official Watcher of Cley Marsh, among a small flock of Dunlin (*Calidris alpina*), when one bird was observed to be without a black belly.

The birds were stalked until, at a range of 20 yards, every detail could be clearly seen.

It was, apparently, in transitional plumage, the back and wings being ashy-brown in colour with markings like those of a Reeve (*Philomachus pugnax*); the chin was greyish white, as were the underparts; the breast was streaked, the streaks ending rather abruptly. It was smaller than the Dunlins and stood lower. The bill and legs appeared brownish-black. By far the most conspicuous features of the bird, however, were the heavily striped appearance of the head and the fact that the bill, which was slightly decurved, appeared to have a most definite downward bend—almost a hook—towards the end; it did not give any particular impression of breadth.

The head, which was somewhat reminiscent of that of the

American Pectoral Sandpiper (*Calidris melanotos*), was entirely unmistakable and consisted of a dark crown, bordered with pale margins, which were separated from the whitish superciliary stripes by a narrow dark line, giving a remarkably striped appearance. The wing pattern in flight did not appear to be noticeably



different from that of the Dunlins, although the difference in size was obvious. No note was heard, although particular attention was paid to this. The bird was subsequently observed by Mrs. R. F. Meiklejohn and Mr. R. A. Richardson, who made the accompanying sketch.

A. H. DAUKES.

Feeding behaviour of Spotted Redshank.—A note (*antea*, vol. xliv, p. 285) describes Spotted Redshank (*Tringa erythropus*) feeding by sweeping the bill from side to side after the manner of an Avocet (*Recurvirostra avosetta*). Several observers report similar behaviour: Messrs. F. W. Fox and A. G. Mason watched one at Portmarnock, Co. Dublin, on September 1st, 1951, which fed in exactly the manner described in the note and could be picked out at long range from among Common Redshanks (*T. totanus*) by this fact. It was not seen to probe with its beak. Mr. and Mrs. V. Lewis have observed the same behaviour at the Stour estuary, Kent, on September 14th, 1947, and again on September 2nd, 1948. They stress the vigorous nature of this behaviour and add that the bill was not thrust forward as in the case of the Green-shank (*T. nebularia*) when behaving similarly, but was kept vertical. Messrs. A. R. T. Moody and B. Goater report a different type of behaviour seen at Warren Flats, Hants., on October 7th, 1950, and March 4th, 1951. On both occasions Spotted Redshanks were seen swimming and "up-ending," like Teal (*Anas crecca*), with which they were associated on one occasion, though more vigorously. Mr. Goater also saw them "skimming the tip of the outstretched bill over the water, through an arc of about 30 degrees in front of them." At Bellfields reservoir, Staffs., on September 9th, 1951, Mr. A. R. M. Blake saw a bird walking slowly through the water for about ten yards with partly open bill. He also saw one dashing

over the water, wings fluttering rapidly, the body often half immersed, behaviour possibly analogous to that of other members of the genus when stirring up muddy water.

Kentish Plover in Northamptonshire.—A report has been received from Mr. A. J. B. Thompson of a Kentish Plover (*Leucopolijs alexandrinus*) at Northampton sewage farm on June 1st, 1950. Full supporting details have been supplied.

Golden Plover in E. Ross showing characters of Northern race.—Mr. R. Hewson has supplied a further case (*cf. antea*, p. 73) of breeding Golden Plovers showing characters of the Northern race (*Pluvialis apricaria altifrons*). On July 7th, 1950, on Ben Wyvis, E. Ross, two birds were seen with extensive and sharply demarcated areas of black on throat and breast. They appeared to be accompanied by two young birds.

Dotterel in Pembrokeshire.—Mr. W. L. Roseveare informs us that he and Messrs. D. W. Lowry and T. E. Kennedy saw two Dotterels (*Eudromias morinellus*) at Dale, Pembs., on September 9th, 1951. The birds allowed a close approach so that a good view of the diagnostic features was obtained. A detailed report has been submitted. Several other observers saw the birds later on the same day. The only previous record for the county is of a bird shot in 1888.

Note used by Avocets in communal display.—When I was photographing the Avocet (*Recurvirostra avosetta*) at the R.S.P.B. reserve at Havergate Island, Suffolk, on June 10th, 1950, a party of six birds held a "communal display" within 15 feet of the hide which I was occupying. This display has been described by P. E. Brown (*Avocets in England*, p. 34). At this close distance a feature of the display was a note made by all the birds taking part, which I recorded at the time as a "deep, petulant purring." It bore some resemblance to that of a cat, but continued for intervals of a few seconds only, and had a quality of anger or threat. It was delivered with head held low and bill slightly open. A. W. P. ROBERTSON.

Western Little Bustard in Kent.—On January 5th, 1952, I was told that an unusual bird had been shot near Hernhill, Kent. It had been put up from a young fruit plantation on open ground on a small hill overlooking the marshes towards the Isle of Sheppey. The chief features of the bird while in flight were the white underparts and the whirring of the wings. After consulting *The Handbook* we came to the conclusion that it was a Little Bustard (*Otis tetrax*). The specimen was forwarded to Dr. J. M. Harrison. J. V. CLARKE.

The specimen referred to above was sent to me by Mr. R. R. Dixon, and, on comparison of specimens of both races in the National collection in the British Museum, it is clearly referable to the nominate form, *Otis t. tetrax*. It is perhaps significant that the wind for some days previously had been blowing persistently from the south or south-west and was often of gale force. The bird is

an immature male, and has not quite completed its moult as the juvenile primaries in each wing are retained. The crop was tightly packed with vegetable fragments which, according to Dr. G. Taylor of the Botanical Department of the British Museum, seemed to be the Field Cabbage (*Brassica campestris*). The scanty insect remains were identified by Mr. E. A. Duffy of the Entomological Department as belonging to the coleopterous species *Pterostichus melanarius* (Illiger) and *Nebria brevicollis* Fabricius.

The present specimen represents only the fourth identified example of the Western race, and is the first instance of this form for Kent. The bird is in my collection. JAMES M. HARRISON.

Sandwich Tern carrying fish on migration.—Mr. P. J. Chadwick reports that on September 8th, 1951, at Cheddar reservoir, Somerset, he saw three Sandwich Terns (*Sterna sandvicensis*) in a flock of 26 Common and Arctic Terns (*S. hirundo* and *macrura*). On three occasions the Sandwich Terns were seen performing a typical "fish flight," as reported (*antea*, p. 73) of migrant Sandwich Terns on the east coast.

Sabine's Gulls in England in 1951.—Full and satisfactory details have been supplied to us of the following occurrences of Sabine's Gulls (*Xema sabini*) in England in 1951 :—

SUSSEX.—One, apparently moulting from first summer plumage, Langney Point, August 25th. (L. P. Alder.)

DORSET.—A juvenile passing south off Portland Bill, September 24th. (N. P. Ashmole.)

Additional records in county reports include :

CORNWALL.—An adult at St. Austell, July 22nd (Mr. and Mrs. J. Hext ; *vide*, *Cornwall Bird Watching and Preservation Society* : 1951 Report, p. 25).

NORFOLK.—One, offshore at Cley, September 4th (C. C. Rose ; *vide*, *Wild Bird Protection in Norfolk* : 1951, p. 34).

Abnormal leg-colour in Lesser Black-backed Gulls.—On August 25th, 1951, at Newcastle, Co. Down, I was watching a large number of gulls spread along the shore. In one group of about ten birds were two British Lesser Black-backed Gulls (*Larus fuscus grællsii*) and two of the Scandinavian race (*L.f. fuscus*). The flesh-colour of the legs of a Great Black-backed Gull (*L. marinus*) near by and of several adult Herring-Gulls (*L. argentatus*), and the yellow legs of one Lesser Black-back of each race were all clearly seen and served to emphasise the brilliant orange colour of the legs of the other two Lesser Black-backs—again one of each race. I have never previously seen any gulls with such a brilliant leg-colour. All birds in the group were adults and were standing within twelve feet of each other. The comparative shades of mantles and normal legs were seen distinctly as the light was good and the birds were viewed from some 20 to 30 yards through x 8 binoculars.

W. T. C. RANKIN.

Iceland Gull in Anglesey.—Messrs. P. E. S. Whalley and M. J. Wotton have supplied details of an immature Iceland Gull (*Larus glaucooides*) which they saw at Aber-Menai Point, Anglesey, on May 26th, 1951.

Razorbill swimming on its back when under water.—While walking close by the harbour at Newlyn, Cornwall, on September 2nd, 1951, during a severe westerly storm, I saw an immature Razorbill (*Alca torda*), swimming and diving in water not more than about twelve feet deep. I then remained still for a considerable time and gradually the Razorbill swam close to where I stood. The water was reasonably clear; it was in fact possible to observe the bird swimming under water with remarkable speed, indeed on a number of occasions it twisted over on its back and the whole of the white under parts were quite discernible. I am unable to trace any records of auks having been seen swimming on their backs when under water, but it may reasonably be supposed they must do so fairly often when in pursuit of their prey.

BERNARD KING.

LETTERS.

THE USE OF DATA ON NEST-RECORD CARDS.

To the Editors of BRITISH BIRDS.

SIRS,—While estimates of error add considerably to the value of data in quantitative biology, it is essential that they should be valid estimates. The basic necessity is that the data should be a random sample from the population being investigated. In D. Summers-Smith's interesting paper on the Spotted Flycatcher in *British Birds* (*antea*, pp. 153-167), standard errors are given for the mean clutch-size over the whole breeding season. In order that such a standard error may give a true picture of the limits of error of the mean, it is necessary that the clutches recorded for each week of the period should be a random sample of all such clutches, and also that the relative frequencies of laying dates in the different weeks should be determined without bias (*i.e.*, systematic error). The former condition may be satisfied well enough with the nest record cards, though this is a matter on which some research would be worthwhile. The latter condition is unlikely to be satisfied, as the author of the paper himself points out, because nest finding tends to fall off as summer advances. In such a case, the attaching of a standard error to the mean is likely to give an erroneous impression of accuracy.

More generally, the whole question of bias in the nest record card data is one which urgently needs investigation. For example, does repeated visiting render the nest more likely to be discovered by predators? Are nests found properly distributed among the various habitats, or is there an excess of nests in 'artificial' habitats like gardens? Partial answers, at any rate, are possible to these questions, and answers, however incomplete, are badly needed.

J. A. NELDER.

OBSERVATIONS ON QUAIL IN 1951: CORRECTION.

To the Editors of BRITISH BIRDS.

SIRS,—My reference (*antea*, vol. xlv, p. 170) to the circumstances in which the Quail's attraction to cover was utilised by netters in Egypt, was based on my memory of an oral communication from R. E. Moreau. The latter has since informed me that my quotation is not quite correct, and that the procedure was as follows:

"In the semi-desert west of Alexandria, tufts of thorny scrub, a foot or so high, occur in places near the coastline. In autumn the Bedawin used to put scraps of net over the landward side of these, and the exhausted Quail, as soon as they touched down from the sea, went for these sole bits of cover;

the Bedawin then, walking along on the seaward side, would scare them well and truly into the nets."

The reference on the last line of p. 168 should read DE BONT not DE BOUT.

W. D. CAMPBELL.

IRIS-COLOUR OF THE NIGHT-HERON IN WINTER.

To the Editors of BRITISH BIRDS.

SIRS,—In my note on the soft-part colour of the Little Egret (*Egretta garzetta*) and Night-Heron (*Nycticorax nycticorax*), *antea*, vol. xlv, p. 101, I suggested on the basis of a few observations in the Suez Canal Zone in the autumn, that the crimson iris of the latter bird might be a character of the breeding-season only. This is evidently not universally the case; in the winter of 1951-52, I made several visits to the London Zoo and found the eyes of the many captive Night-Herons there to be typically crimson throughout.

K. E. L. SIMMONS.

AUTUMN CHASES.

To the Editors of BRITISH BIRDS.

SIRS,—May I make a few more remarks on the above subject further to those in my paper (*antea*, vol. xlv, pp. 369-372)?

Williamson's note (*ibid.* pp. 197-199) on similar instances as those with which I dealt, puts forward some suggestions as to the nature of such behaviour, ascribing it to the internal factors which help to stimulate migration, adding however that this explanation did not apply to the non-migrant species concerned. I believe that such a view is fundamentally true, even as regards non-migrants. In autumn, many, if not all, species, migrant and resident alike, undergo some physiological changes to varying degrees, due in part to common environmental factors. In those migrant species such changes contribute to the release of migration, but in the residents (and, in some migrant species, in one sex only) such behaviour has a very much higher threshold of release which is seldom reached. However, at times of intense stimulation, "irruptions" occur in certain species, and, further, strictly resident species may make abortive attempts to migrate (Rudebeck, "Studies on Bird Migration," *Vår Fågelvärld Supplementum* 1). Such physiological changes, which are generally more complicated than mere regression of the gonads (*vide*, Wolfson, *Condor*, vol. xlvii, pp. 95-127), have an effect on such behaviour as flight-reactions in lowering the level of responsiveness so that the behaviour is easily released, often by an inadequate object (*i.e.* another species).

Care must be taken in the interpretation of chase incidents, especially those involving birds of different species. I have pointed out that there is a marked tendency for the following bird to take on the flight pattern of the other. Should the first one be alarmed by the unwanted and perhaps unfamiliar attention, it might respond in alarm (often unnecessarily), increasing speed and twisting. Thus it would appear that an aggressive chase was in progress, whereas, in reality, the incident might be quite harmless.

A point has been raised (*antea*, vol. xlv, pp. 68-69) which was not treated in my paper. A House-Sparrow (*Passer domesticus*) was seen to dislodge Swallows (*Hirundo rustica*) by sidling up to them on telephone-wires, and, more positively, by flying at them. I have no records of the latter but the following was noted from time to time in Egypt. Bee-eaters (*Merops apiaster*), especially, on alighting on wires would attract one or more sparrows to their close vicinity; these waited with obvious anticipation for the forthcoming flight in which they joined.

In her charming book *Birds as Individuals*, Len Howard says that young Willow-Warblers (*Phylloscopus trochilus*) and sometimes Chiffchaffs (*Ph. collybita*) "delight in chasing other species, often much to their annoyance." "Occasionally Willow-Warblers and Chiffchaffs will keep to their species for the chasing game, but usually in their case, a different species is chosen for play." The book itself should be read for the delightful details it gives of such behaviour. Works such as Miss Howard's make me wonder whether some of us miss many of the joys of bird watching by a too serious approach to our subject.

K. E. L. SIMMONS,

THE CONDUCT OF STARLINGS IN A TRAP

To the Editors of BRITISH BIRDS

SIRS.—Referring to my previous letter (*antea*, vol. xliii, pp. 368-9) I should have added that the birds whose conduct I described were caught in a trap with an entrance door hinged at the top, which made a considerable sharp crack when it fell (*antea*, vol. xxiii, p. 290). This noise thoroughly startled the birds, and was undoubtedly the main cause of the screaming, rather than the subsequent handling. Since the period mentioned, I have caught some 150 Starlings in a trap on the "Potter" principle, with an almost silent door, and only six have screamed, all of which were caught singly.

C. L. COLLENETTE.

BOOKS RECEIVED.

Parental Care and its Evolution in Birds.—By S. Charles Kendeigh. (Univ. of Illinois Press, \$4.00 paper, \$5.00 cloth.)

Enjoying the Country.—By E. Fitch Daglish. (Faber and Faber, 18s.)

The Changing Life of Wild Britain.—By H. L. Edlin. (Batsford, 21s.)

Birds of the Gauntlet.—By H. von Michaëlis. (Hutchinson, 84s.)

Mountain Birds.—By R. A. H. Coombes. Plates by G. E. Lodge. (Penguin Books, 4s. 6d.)

Birds of Britain Calendar : 1953.—Photographs by Eric Hosking. (Country Life, 6s.) [This is an attractive production containing 24 photographs, each with a few lines of description, and including several of Eric Hosking's remarkable flight studies taken by high-speed electronic flash, but some of the pictures are very familiar.]

REQUESTS FOR INFORMATION.

"Wreck" of Leach's Fork-tailed Petrels.—We have received preliminary reports from as many as 28 counties which show that there has been a remarkable "wreck" of Leach's Fork-tailed Petrels (*Oceanodroma leucorhoa*), chiefly on the west coast, but extending over much of the rest of the country (one was even found in Regent's Park, London). Apparently this began during the heavy gales of October 25th-26th in the south-west—where it is suggested that a large number of these birds were caught by too strong a wind in the Bristol Channel—and continued there and elsewhere during the following week. As many as 260 Leach's Fork-tailed Petrels were counted at the New Grounds in Gloucestershire, and 120-130 were seen at Brean Down in Somerset, and it is stated that some 80 were picked up dead on the saltings there (*per* Bernard King). There are also unconfirmed reports of "large numbers" at Burnham-on-Sea, Somerset. Apart from these, we have been sent several records of smaller parties of 40-50 birds off-shore and many dead have been found in the west coast counties, but it is apparent even from the incomplete reports to hand at the time of going to press that a quite unprecedented number of these birds has been involved, and we shall publish a full report as soon as all the figures are available. Mr. H. J. Boyd has kindly agreed to collect all the information for us and we ask that records be sent to him direct, at the Severn Wildfowl Trust, New Grounds, Slimbridge, Gloucestershire. It is evident that a few Storm-Petrels (*Hydrobates pelagicus*) are involved and records of this species should also be sent to Mr. Boyd.

Wood-Sandpipers in the British Isles, 1952.—There was a considerable passage of Wood-Sandpipers (*Tringa glareola*) during the early part of the autumn and we shall be glad to receive any records of this species in order to assess the full extent of what appears to have been a quite abnormal influx; probably it will be found desirable that a summary be published.

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THE BIRDS OF INNER LONDON, 1900-1950.

BY

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IN 1929 A. Holte Macpherson published *A List of the Birds of Inner London* (*antea*, vol. xxii, 222-44) outlining the history and status of the birds occurring in an oblong area with boundaries running 4 miles east and west and $2\frac{1}{2}$ miles north and south of Charing Cross. Since then an account, necessarily restricted, has been given annually in this magazine (A. Holte Macpherson 1930-41, G. Carmichael Low and Miss M. S. van Oostveen 1942 and 1946, G. Carmichael Low 1943-45, Miss M. S. van Oostveen 1947, C. B. Ashby 1948-49 and W. G. Teagle 1950). This paper summarizes the information available on the birds of this major urban area for the period 1900-50, paying particular attention to the changes in numbers and distribution of the more important species, many of which are striking.

The boundaries of Inner London, although purely artificial, enclose an area of ecological significance, including most of the densely populated core of the capital, all the central parks (except for a small portion of Victoria Park) and some districts in the west and north containing houses with large gardens. It is rich in water, with a long stretch of the Thames, and lakes in many of the parks. The reservoirs and the larger, wilder open spaces, such as Hampstead Heath and Wimbledon Common, are excluded. To survive in such an area a species must be able to adapt itself to living in close proximity with man. Some of the birds which had done so before 1900 were a surprise to many ornithologists, and a number of the newer arrivals have been equally unexpected. There is no sign that the changes are at an end, and in the present state of our knowledge it would be rash to guess what may happen in the next fifty years.

Between 1900 and 1950 there have been a number of developments affecting the bird-life of Inner London. Although the process of demolishing and replacing the buildings will never cease, the main areas of built-up land were fixed by 1900 and the few changes since are of minor importance. There is one major exception, though presumably only temporary. In the last war many acres of buildings were destroyed by enemy action, leaving derelict areas, most noticeable in the City, but occurring in all parts, which have had a vital effect on birds in the last ten years. Both wars caused changes of a less enduring character, e.g. the draining of the lake in St. James's Park in the first, the massacre of Wood-Pigeons during the second and, in both, the closing of some

sections of the parks and the conversion of others into allotments. During the last fifty years the streets have become increasingly congested and the horse traffic has greatly declined, so that there is less food available for those birds which scavenge in the roadway, and less chance of their picking up what food is present. The trees in the parks and gardens, many of which were planted in the last century or before, are ageing steadily, providing more food and nesting holes for some species of birds. An important factor has been the virtual disappearance of the Grey Squirrel (*Sciurus carolinensis*) from the area, following the campaign for its destruction which began about 1930. The Grey Squirrel eats both eggs and young birds, and, although its influence on bird life may be less serious than some have suggested, the elimination of this predator has almost certainly been a factor in the increase of some species, such as the Blackbird and Mistle-Thrush. Finally, during the last fifty years the growth of London has continued at a striking rate, halted only temporarily during the two wars. The small area of Inner London has been separated from the open country by an ever-growing zone of built-up land, and it might reasonably have been expected that the bird-life would be steadily impoverished as a result. The disappearance of the Rook after 1916 must have seemed a clear sign of things to come. The Committee on Bird Sanctuaries in the Royal Parks in their 1928 Report said—"In the matter of bird-life the inner Parks generally have suffered most from the rapid expansion of London in latter years, and will do so increasingly as long as that process continues. It is feared that, in their case, as London goes on spreading, the number of species to be seen will decrease, and that all that can be done is to retard their diminution." The opposite happened. In the last fifty years the number of breeding species has increased and so also, though to a lesser extent, has the number of species regularly visiting the area in winter.

Before attempting a rough balance-sheet it is well to point out that even for this small area of forty square miles, perhaps the most watched in the world, the record is far from complete. This is particularly true of the early years of the century when we lack precise information on the status of even some of the commoner breeding species. By 1929 the position was more satisfactory, but Holte Macpherson pointed out that there were comparatively few records from open spaces other than Hyde Park and Kensington Gardens. Since then there has been a steady increase in the number of observers and most of the parks are watched regularly, whilst particular attention has been paid to the City bombed sites. We have visited all parts of the area, mainly in the breeding season. Yet the south bank of the Thames (apart from Battersea Park), the East End and the docks are still inadequately covered and would repay closer study. Still more important, the grounds of Holland House, whose superb woodland

has for long served as a vital sanctuary in the heart of the central zone and acted as a base from which species such as the Jay, Great Spotted Woodpecker and Stock-Dove have been able to spread into less favourable parts, were only rarely visited during the last ten years of the period.

Bearing these limitations in mind it appears that there are some twenty species which have probably bred or attempted to breed throughout the period 1900-50. These are Carrion-Crow, Starling, Greenfinch, Chaffinch, House-Sparrow, Great Tit, Blue Tit, Spotted Flycatcher, Mistle-Thrush, Song-Thrush, Blackbird, Robin, Hedge-Sparrow, Swift, Tawny Owl, Mute Swan, Mallard, Wood-Pigeon, domestic pigeon and Moorhen. In addition, there are the Jackdaw and Wren, which appear to have been continuously resident but in such small numbers that breeding may not have been regular; the Great Spotted Woodpecker, whose status in the early years of the period is uncertain, but which has been probably resident and breeding throughout, and the Little Grebe, for which regular information is not available as its main breeding stronghold in recent years has been the grounds of Buckingham Palace. There has been one certain loss in the period (the Rook), and two species which may have ceased to nest (the Willow-Warbler and Blackcap, both of which formerly bred regularly in the grounds of Holland House, but whose status there in the last ten years is not known). Against this may be set seven definite additions to the list of regular breeding birds—Jay, Goldfinch, Pied Wagtail (which formerly nested intermittently in various parks, and now does so regularly in the bombed areas of the City), Black Redstart, Kestrel, Tufted Duck and Coot. The Stock-Dove is a probable gain, for it now breeds every year in small numbers, whereas there is no clear evidence that it nested at the beginning of the century, though W. H. Hudson in 1898 (*Birds in London*) considered it a possible resident. The Tree-Creeper may probably be regarded as now established as a resident in Kensington Gardens, though its numbers are still small. The Coal-Tit may become a regular nesting bird in the same area, but as, so far, it has only once been proved to breed it is better classified with several other species (Yellow Wagtail, Lesser Whitethroat, Chiffchaff, Swallow, Cuckoo and, probably, Linnet) which have bred occasionally in the period. It is interesting to note that, of the additions to the list of breeding species mentioned above, the great majority (Jay, Goldfinch, Pied Wagtail, Tree-Creeper, Black Redstart, Kestrel and Coot) have been known as nesting birds only within the last twenty-five years.

Lack of definite information makes it more difficult to assess changes in numbers of species which have been present throughout, but it is safe to say that the Mistle-Thrush, Blackbird and

Great Spotted Woodpecker have both increased and extended their range in the last fifty years, whilst there is some evidence that the House-Sparrow may have declined in numbers.

Amongst the non-breeding species the gulls show the most remarkable changes in status. The Black-headed Gull may now be seen during most of the year, perhaps because of the establishment of a breeding colony in Middlesex. The Lesser Black-back, at one time a scarce visitor, is now a common passage-migrant and a winter resident in small numbers. The Great Black-back, formerly a somewhat uncommon winter visitor, has become numerous on the Thames in recent winters and is also seen at other times of the year. The Grey Wagtail is also more common as a winter visitor, perhaps due to the construction of emergency water tanks on the bombed sites.

Any apparent rise in the numbers of passage-migrants seen in the parks and elsewhere must be mainly attributed to the increase in the number of observers, though perhaps in the case of the Pied Flycatcher there are reasons for assuming that it is now occurring more frequently. Towards the end of our period the London Natural History Society began a study of the diurnal migration of many species (mainly Starling, finches, pipits, wagtails, larks, thrushes, hirundines, Swift and Wood-Pigeon) which cross London on a broad front during the autumn, but much more remains to be done before a full picture can be given.

This brief summary shows how considerable have been the changes in the bird life of the area during the years 1900-50, and that far from a steady impoverishment having taken place there has been a welcome increase in the number of species, especially within the last twenty-five years. The reasons for such changes are often complex and difficult to ascertain precisely with the present limited knowledge of the relevant ecological factors for many species, but, wherever possible, we have mentioned in the specific list which follows the influences which may have led to changes in numbers or distribution.

Most of the information in the specific list has already been given in detail in the various reports on the Birds of Inner London mentioned above, or in the *London Bird Report*. To save space references have not been given in such cases, but full information can be readily obtained by referring to the appropriate year in these sources. Where new information has been incorporated full references are given in the text. In a few instances where the name only of the observer is stated the observation has been obtained from the unpublished records of the London Natural History Society. We wish to express our sincere thanks to the Society for giving us access to this material and to the abstracts they have prepared as a result of the extensive survey of the literature made for their forthcoming book *Birds of the London Area 1900-50*.

HOODED CROW (*Corvus cornix*).—Now rare; last recorded 1938. Mr. C. Borrer (*in litt.*) mentions that he repeatedly saw birds on the Thames mud at Chelsea in autumn and winter during the 1920's. The only other records are for the same area in the winter of 1901-02.

CARRION-CROW (*Corvus corone*).—Resident. A few pairs nest in the larger parks, and attempts at nesting, sometimes successful, have been made in the Temple, the Chelsea Hospital grounds, and various squares, usually those closed to the general public. There are two cases of nesting on buildings (*antea*, vol. xliii, p. 368). In the parks ducklings and young Moorhens are taken, and Crows have been seen robbing Tufted Ducks and Black-headed Gulls of bread. They are known to rob the eggs of the Wood-Pigeon and the domestic pigeon and no doubt other species are victimized. They frequently scavenge along the mud of the Thames. Much of their feeding is done on the turf of the parks and quieter squares.

ROOK (*Corvus frugilegus*).—Bred in small numbers during the earlier part of the century. The last known case of breeding in the area was in 1916, when four pairs built in a plane tree in the Temple. The Rook's disappearance as a breeding species is almost certainly due to the increased distances to suitable feeding grounds. It is now a rare visitor, usually seen flying over the area in autumn and spring.

JACKDAW (*Corvus monedula*).—Resident in Kensington Gardens, where the small colony still persists. In recent years not more than six pairs have been reported in the spring, and the number actually nesting is usually less. The birds are rare or absent in autumn and early winter, but in December and after the flock sometimes numbers more than twenty birds. Elsewhere in the area it is a rare visitor.

MAGPIE (*Pica pica*).—Most of the records appear to relate to birds escaped from captivity. The pairs which nested in some of the Royal Parks in the first ten years of the century were almost certainly escapes. In 1949 single birds, which had the appearance of being wild, were reported from Battersea Park and Brompton Cemetery and two were seen in Kensington Gardens.

JAY (*Garrulus glandarius*).—Resident. Up to 1928 the species was described as an occasional visitor. Its main spread seems to have taken place from the grounds of Holland House, where in 1929 a pair was present throughout the summer. In 1932 three young, able to fly a little, were seen there, whilst earlier in the year a pair had attempted to nest near by in Kensington Park Gardens. Jays have continued to frequent the Holland House area ever since. In Kensington Gardens a pair was observed throughout the summer of 1941, and nesting was proved in 1942.

Breeding has occurred annually since 1945. Young were seen in Hyde Park in 1938. An attempt at nesting was made there in 1943, and a pair bred successfully in 1944.

Further east young birds were seen near Laneaster House in 1942. In 1947 a pair was suspected of having nested in the grounds of Buckingham Palace, and during 1950 at least two families were seen in St. James's and the Green Parks. The species began to be seen regularly in Battersea Park in 1946, in which year it also made its first appearance in Chelsea Hospital grounds. Nesting was first proved in Battersea Park in 1947.

The influx into Regent's Park does not seem to be connected with the spread from the Kensington area. The species appears to have made its first appearance there in 1934-5, having perhaps infiltrated from Hampstead. A pair nested on Primrose Hill in 1938, but no young were seen. The invasion was apparently a failure, and there are no further records until 1944. Breeding has not yet been proved in Regent's Park, but the species has been observed there frequently since 1948.

Some of the nests in Kensington Gardens have been in fairly exposed positions, and in 1947 a pair bred in Holland Park Road. The attempts to breed in plane trees in such busy thoroughfares as Cromwell Road (1949) and Thurloe Place (1950) were quite extraordinary, although in neither case were the birds successful. Young were reared in Pembridge Square, Bayswater in 1950 (L. O. Welch, *The Field*, vol. 196, p. 688).

These records illustrate remarkable fearlessness and adaptability in a normally shy species. London Jays occasionally perch on high buildings. They accept food from the public, and often forage in park litter baskets. On one or two occasions a bird has been seen feeding in the roadway.

The species is now found in all the central Royal Parks, Battersea Park, the grounds of Holland House and Brompton Cemetery, and is frequent in the gardens of Bayswater, Chelsea, Notting Hill and South Kensington. It has also been seen in Gray's Inn, Paddington Cemetery, and the garden of Lambeth Palace. It has apparently not yet spread as far east as Victoria Park or Southwark Park.

STARLING (*Sturnus vulgaris*).—A common resident, breeding in holes in trees or buildings in or near parks, gardens, most of the squares and the larger bombed sites. The study of the London Starling roosts now being made by the London Natural History Society (of which a full report will be published in due course) has shown that the vast majority of the roosting birds are British, feeding and nesting in the suburban areas from six to fourteen miles distant from the central roosts. These roosts are in use throughout the year, though the number of birds using them changes with the season. The highest totals (over 90,000) have been recorded after the breeding season in June and July, when

most of the birds are concentrated in the trees in St. James's Park. In these months the numbers on the buildings in Trafalgar Square are small, but they increase slowly throughout the late summer and autumn until, with the fall of the leaves in late October and November, the bulk of the birds transfer from the trees to the building roosts. Some Starlings continue to roost in trees, usually along the Embankment, throughout the winter. The numbers at the winter roosts are much smaller (between 20,000 and 30,000), and with the start of the breeding season they drop abruptly to less than 10,000. In addition there are several tree roosts south of the Thames, used mainly in autumn and winter, and a number of minor roosts, both in trees and on buildings, used by local birds.

HAWFINCH (*Coccothraustes coccothraustes*).—Occasional. All recorded occurrences have been in spring or summer, but there is no suggestion that the species has bred in the area. In the spring of 1947 a pair frequented the sheep-fold in Kensington Gardens.

GREENFINCH (*Chloris chloris*).—Resident. Usually breeds in small numbers in the larger parks and has probably nested in Chelsea and St. John's Wood. Flocks appear in the Green Park in autumn when the berry crop is good. Noted on passage over the area in autumn.

GOLDFINCH (*Carduelis carduelis*).—Formerly an uncommon visitor to the area, this species was noted in increasing numbers from the early thirties. In 1945 a pair and three young were seen in Regent's Park, whilst in 1948 a pair was seen there several times during the breeding season, though no evidence of nesting was obtained. In 1949 at least one pair nested successfully in Battersea Park, and in 1950 two nests were found there. In 1950 also an adult was seen feeding young in Victoria Park, and breeding was suspected near Brompton Cemetery. Birds were seen in the St. John's Wood area in June and July, 1949, and an adult and two juveniles were observed near by on Primrose Hill in July, 1950. The species is more widespread in winter and has become a regular winter visitor to the bombed areas in the City.

SISKIN (*Carduelis spinus*).—Rare autumn visitor. Parties were seen in and over Ladbroke Square in October, 1937, and October, 1938 (E. Simms). One was seen near Holland Park in October, 1949.

LESSER REDPOLL (*Carduelis flammea*).—An occasional autumn visitor to the parks and large gardens.

TWITE (*Carduelis flavirostris*).—Once, 1925.

LINNET (*Carduelis cannabina*).—An occasional visitor, usually in spring or autumn, though flocks have sometimes been seen in winter. There are a few records of birds remaining during the breeding season, and there is some evidence that a pair bred in Hyde Park in 1918.

BULLFINCH (*Pyrrhula pyrrhula*).—An occasional visitor to parks and gardens in the western half of the area.

CROSSBILL (*Loxia curvirostra*).—Once. A party was seen flying over Kensington Gardens on November 21st, 1909 (W. P. K. Neale in *Countryside*, vol. 10, p. 96).

CHAFFINCH (*Fringilla cœlebs*).—Resident. Breeds in fair numbers in all the larger parks. It has also nested in recent years in St. James's Park, Ranelagh Gardens, and areas with large gardens such as St. John's Wood and Campden Hill, whilst it probably nests in Brompton Cemetery and Queen's Park. It has not so far been reported as breeding in the central squares, where it may be seen occasionally outside the breeding season. Large numbers have been observed passing over in autumn.

BRAMBLING (*Fringilla montifringilla*).—Passage-migrant and occasional winter visitor. This species has been observed passing through the area in October, March and April, and is occasionally seen in parks and gardens.

YELLOW BUNTING (*Emberiza citrinella*).—Three times, 1903, 1928, and 1947.

SNOW-BUNTING (*Plectrophenax nivalis*).—Once, 1935.

HOUSE-SPARROW (*Passer domesticus*).—Resident. Still the most numerous bird in the area, although in the opinion of several observers its numbers have decreased during this century. There is little numerical evidence available to assess the extent of this decline, but a census of Kensington Gardens carried out in the winter of 1948/9 (*London Bird Report* (1949), 14: 41-48) showed that House-Sparrows were only about one-third as numerous as in the winter of 1925/6, when similar counts were made (*Discovery*, August, 1926). The most common explanation is that this decline is largely due to the reduction in food supplies, following the almost complete replacement of horse traffic by motors. A decrease has also been noted in parts of the United States, France and Canada, but a fall in numbers occurred in some localities in the United States, such as poultry farms, where this factor would be of little importance. Similarly the sparrows in Kensington Gardens are likely to be only slightly affected by it, as bread forms a large part of their diet. It is possible that the species is suffering a general decline in various parts of its range, due to causes at present unknown.

The London sparrow has a varied diet, though bread forms a large part of it. Londoners provide a regular food-supply in all parks and many of the squares and the bird is noticeably more numerous in such places than in similar squares not open to the public. It feeds on seeds of all kinds, whilst in summer it hawks for insects, and searches tree-trunks like a Tree-Creeper. It has been seen investigating railway engines and car radiators

for crushed insects. In some of the parks it takes crumbs from visitors, often perching on the hand to feed, and in park restaurants it will alight on the tables. On the Thames it flocks round the grain barges as they are unloaded, and at certain seasons it feeds along the tide-line.

Many sparrows roost in their nest-holes throughout the year, but large numbers join communal roosts. These are usually in trees or bushes, though there are a few cases of holes in buildings being used, while occasional instances are known of single birds passing the night inside occupied buildings. Many of the communal roosts have been in use for a number of years. In Inner London they range in size from a few birds to well over a thousand (though still larger ones are found in the outer areas), and are not infrequently shared with Starlings.

TREE-SPARROW (*Passer montanus*).—Once, 1928.

WOOD-LARK (*Lullula arborea*).—Once, 1937. (This record, although published in the Report of the Committee on Bird Sanctuaries in the Royal Parks, was not accepted by Holte Macpherson. It has since been reconsidered, and is published here in view of the observer's experience of the species and the fuller details now received).

SKY-LARK (*Alauda arvensis*).—Mainly an autumn passage-migrant and winter visitor. Shortly before and during hard weather, flocks fly in from the country, alighting in the parks, and when conditions are severe, even in gardens and streets. Birds also alight to feed in the parks at other times in winter and early spring, but usually where there are spacious open areas of grassland.

TREE-PIBIT (*Anthus trivialis*).—An occasional passage-migrant, usually noticed in spring.

MEADOW-PIBIT (*Anthus pratensis*).—A regular autumn migrant and hard weather visitor. It has been seen frequenting the more open parts of the parks and also the bombed sites. Seen less often in spring.

YELLOW WAGTAIL (*Motacilla flava flavissima*).—Passage-migrant in small numbers to the parks and City bombed sites. During the recent war, when a large part of Regent's Park was closed to the public, Yellow Wagtails bred on the site of the present cricket pitches. (*Report of the Committee on Bird Sanctuaries in the Royal Parks*, 1939-47).

GREY WAGTAIL (*Motacilla cinerea*).—A regular passage-migrant in spring and autumn, also occurring in smaller numbers as a winter resident. It is found in those parks which have lakes, and sometimes on the Thames mud. Since at least 1942 it has frequented the emergency water tanks, etc., on the bombed sites.

PIED WAGTAIL (*Motacilla alba yarrellii*).—One or two pairs have bred in the Cripplegate bombed area each year since at least 1946.

Earlier in the century it nested occasionally in Kensington Gardens, Hyde Park and the Zoological Gardens. In 1946 young were seen being fed in Regent's Park, and birds were present in April and May, 1947. In 1950 one or two adults were observed in St. James's Park from March until late May, and were seen taking food in the direction of Whitehall Gardens, but no nest was located. In Battersea Park a young brood was seen being fed in 1949. The bird is more widespread in winter, occurring in all the parks, some of the squares and bombed areas, and by the Thames.

WHITE WAGTAIL (*Motacilla a. alba*).—Twice; 1925 and 1941.

TREE-CREEPER (*Certhia familiaris*).—Formerly an occasional visitor, but now resident in small numbers in Kensington Gardens. First proof of nesting was obtained in 1945. It is frequently noticed in Regent's Park and Hyde Park, but elsewhere its visits are occasional.

NUTHATCH (*Sitta europæa*).—A rare visitor to the parks. In 1946 one was seen on a fire-escape in Cannon Street.

GREAT TIT (*Parus major*).—A fairly common resident, breeding in some of the parks, and occasionally in squares and gardens. It is commoner and more widely distributed in autumn and winter. In the parks it is occasionally seen feeding in litter baskets.

BLUE TIT (*Parus cæruleus*).—The commonest resident tit, breeding regularly in the parks, some gardens and occasionally in the squares. In autumn there is an influx, which in 1949 was particularly noticeable. During the winter birds are seen in many parts of the area, including the bombed sites. In the parks they forage in the litter baskets.

COAL-TIT (*Parus ater*).—This species has been present in Kensington Gardens during the breeding season in several recent years, but breeding was established only in 1947. It has occasionally been seen in other parks in the breeding season. More birds are noticed in the autumn.

MARSH-TIT (*Parus palustris*).—An occasional autumn and winter visitor to parks and gardens. Nesting may have occurred in the grounds of Holland House in 1937, an adult having been seen feeding four young there on May 29th (E. Simms).

LONG-TAILED TIT (*Ægithalos caudatus*).—An occasional autumn and winter visitor. Most records are of flocks seen in the parks.

GREAT GREY SHRIKE (*Lanius excubitor*).—Once, 1949.

RED-BACKED SHRIKE (*Lanius collurio*).—Once, 1904.

WAXWING (*Bombycilla garrulus*).—Twice; five were seen in Kensington Park Gardens on January 22nd, 1942 (Col. R. Meinertzhagen, *The Times*, 26.1.42), and a dying bird was found in St. John's Wood on April 4th, 1947, (C. K. McConnan, *antea* vol. xli, p. 36).

SPOTTED FLYCATCHER (*Muscicapa striata*).—A fairly common and widely distributed summer resident, breeding in the parks and other large open spaces and also in some small gardens and squares.

PIED FLYCATCHER (*Muscicapa hypoleuca*).—Passage-migrant, more usually noticed in autumn. Although this species was rarely recorded before 1949, it was seen on six occasions on autumn passage in 1949 and 1950.

GOLDCREST (*Regulus regulus*).—A regular autumn migrant and winter visitor in small numbers.

CHIFFCHAFF (*Phylloscopus collybita*).—A passage-migrant, more frequently reported in autumn. Birds were sometimes heard singing throughout the summer in the grounds of Holland House and in Hyde Park prior to 1939, but proof of breeding was obtained only in 1937, when, on May 29th, E. Simms found a nest at Holland House with four eggs.

WILLOW-WARBLER (*Phylloscopus trochilus*).—Passage-migrant. Nested in Hyde Park in 1921 and 1922, and in Kensington Gardens in 1923. In Regent's Park it probably bred in 1933, whilst a pair stayed the summer in 1934 and breeding was established there in 1935. There are no later breeding records for any of the public parks. In 1929 Holte Macpherson wrote that two or more pairs generally stayed to nest in the grounds of Holland House. The last known breeding record for Holland House was in 1937.

WOOD-WARBLER (*Phylloscopus sibilatrix*).—An occasional passage-migrant; noted more often in spring than in autumn.

REED-WARBLER (*Acrocephalus scirpaceus*).—Formerly observed most years in Kensington Gardens, usually on spring passage, but it is now rare, having been noted only twice since 1928.

MARSH-WARBLER (*Acrocephalus palustris*).—Once, 1924.

SEDGE-WARBLER (*Acrocephalus schœnobænus*).—An occasional passage-migrant, usually visiting those parks which have lakes. There are few autumn records.

GARDEN-WARBLER (*Sylvia borin*).—A fairly regular passage-migrant in small numbers, observed in the parks and sometimes on the bombed sites. Although birds have occasionally been heard during the summer there is no evidence that the species has bred in Inner London.

BLACKCAP (*Sylvia atricapilla*).—Passage-migrant in small numbers, more frequently noticed in spring than autumn. In 1929 Holte Macpherson said two pairs generally stayed to nest in the grounds of Holland House, but its status there in recent years is not known. In 1950 a singing male was present in the breeding season in an area of neglected gardens in St. John's Wood, whilst another frequented Battersea Park. There was no evidence of nesting in either case.

WHITETHROAT (*Sylvia communis*).—A regular passage-migrant, occurring in parks, on the bombed sites and elsewhere. A pair was present in Kensington Gardens for some weeks in the spring of 1924, but there was no evidence of nesting.

LESSER WHITETHROAT (*Sylvia curruca*).—Passage-migrant in small numbers usually noticed in spring. It bred in the grounds of Holland House in 1915, and possibly in 1921. In the latter year a pair nested in the framing-ground enclosure in Hyde Park. A singing male was observed throughout the summer of 1942 in Kensington Gardens.

FIELDFARE (*Turdus pilaris*).—A regular autumn migrant, less frequent in spring. Also occurs at times in winter. They occasionally alight to feed in the parks.

MISTLE-THRUSH (*Turdus viscivorus*).—Resident. It breeds in most of the parks and some other open spaces, including squares, where there are lawns. In 1929 a few pairs only were resident and nesting, and outside the grounds of Holland House and Kensington Gardens the species was uncommon. It has increased in the area during the past few years, possibly due in part to the extermination of the Grey Squirrel. Nests are often in remarkably public places, sometimes in trees quite close to busy pavements. After the breeding season families tend to wander, and some breeding localities are deserted until the autumn. It occasionally sings from buildings.

SONG-THRUSH (*Turdus ericetorum*).—Resident. It is now neither as common nor as widespread as the Blackbird. At the present time it breeds in all the larger parks and some areas with large gardens. It is now rare in the central squares, though from 1938 to 1940 it was reported as resident in Lincoln's Inn Fields. It has been observed singing from buildings on several occasions.

REDWING (*Turdus musicus*).—A regular autumn migrant, also seen in the spring. During severe weather it occurs in the parks, and sometimes even in the streets.

RING-OUZEL (*Turdus torquatus*).—Once, 1922.

BLACKBIRD (*Turdus merula*).—A common resident, now breeding in all the parks, in most of the squares and the gardens of some houses, as well as in the Cripplegate area. It has undoubtedly increased and spread in recent years. The winter counts in Kensington Gardens, already referred to, showed that it was almost five times as numerous in the winter of 1948/49 as in 1925/26. Its invasion of parts of the central area is quite recent. Thus Bertram Lloyd, after many years' residence in Bloomsbury, heard his first Blackbird there in the winter of 1935, and by 1937 it was nesting in Lincoln's Inn Fields. Blackbirds now breed regularly in or near most of the squares in the Bloomsbury area.

An increase in some of the parks was noted shortly before 1935, and, as in the case of the Mistle-Thrush, some observers consider it was partly due to the destruction of Grey Squirrels. In several areas birds regularly sing from buildings.

WHEATEAR (*Enanthe enanthe*).—A regular passage-migrant, occurring in the parks, on the bombed sites, and occasionally elsewhere. Some birds observed have been considered to belong to the Greenland race (*E. æ. leucorrhoa*).

WHINCHAT (*Saxicola rubetra*).—Now a regular passage-migrant, observed mainly on the bombed sites. Formerly only an occasional visitor to some of the parks.

STONECHAT (*Saxicola torquata*).—Twice, 1912 and 1949.

REDSTART (*Phœnicurus phœnicurus*).—A regular passage-migrant. Usually seen in the parks, but has occurred at Cripplegate and elsewhere.

BLACK REDSTART (*Phœnicurus ochrurus*).—Summer resident, with occasional birds wintering. First seen in the area in 1927, the main invasion may be said to have begun in 1936, leading in 1940 to the first proved case of breeding. In this year a pair brought off two broods within the precincts of Westminster Abbey. It has since bred annually in Inner London. Most of the nests have been found in the City bombed areas, but there are also breeding records from Stepney, Notting Hill and Westminster. Breeding was suspected at Brompton Cemetery in 1949 and proved in 1950. Up to 1946 not more than three pairs were known to have bred in any one year, but the numbers have tended to rise since, reaching 11 pairs in 1949 and 14 in 1950. As R. S. R. Fitter (*London's Birds*, 1949) has pointed out, although the blitz, by providing nesting sites and open ground for feeding, has been a major factor in the increase of this species in Inner London, the spread began some years before the war and the first known brood was fledged before the bombing began.

NIGHTINGALE (*Luscinia megarhyncha*).—A rare passage-migrant of which there are very few recent records.

ROBIN (*Erithacus rubecula*).—Resident. Breeds in all the larger parks, Ranelagh Gardens, Lambeth Palace and in large gardens in such areas as Campden Hill and St. John's Wood. More widespread in winter, when birds occur in the squares and the bombed areas in the City.

HEDGE-SPARROW (*Prunella modularis*).—Resident. Its breeding distribution is similar to that of the Robin, though it is perhaps slightly less numerous. It is less widespread in winter, and there are few records from localities in the central area other than the parks.

WREN (*Troglodytes troglodytes*).—Resident in small numbers. Breeds, or attempts to do so, most years in Battersea Park, less regularly in Kensington Gardens and Regent's Park, and probably

in the St. John's Wood area. More widespread outside the breeding season, when it has been seen also in the Temple, St. James's Park, Cripplegate area, Ranelagh Gardens, South Kensington and Hyde Park.

SWALLOW (*Hirundo rustica*).—A regular passage-migrant in spring and autumn. In 1907 and 1908 a pair was reported to have nested in a deer-shed in the Zoological Gardens, and in 1941 Mr. M. Milne-Watson (*per* E. M. Nicholson) observed a pair paying repeated visits to a bombed building in Eccleston Square during the breeding season. From their behaviour he considered that they had a nest there, but owing to the inaccessible nature of the site it was not possible to verify this.

HOUSE-MARTIN (*Delichon urbica*).—A regular passage-migrant in spring and autumn. Although it does not breed within the area, there has been a small colony for some years in Hammersmith, less than a mile outside the western boundary.

SAND-MARTIN (*Riparia riparia*).—A regular passage-migrant, less frequent than the House-Martin and Swallow.

SWIFT (*Apus apus*).—Summer resident, breeding in small numbers in St. John's Wood, Kilburn and perhaps elsewhere on the edge of the area. Definite nesting records of this species are rare, and Holte Macpherson was unable to say whether they bred in Inner London. It is therefore of particular interest that Dr. Stuart Smith (*in litt.*) informs us that he watched three pairs in June and July, 1928, feeding young in nests under the eaves of the General Post Office in the heart of the City. Feeding birds may be seen over the lakes in the parks during the breeding season. The species occurs over all parts of the area on spring and autumn passage, often in considerable numbers.

NIGHTJAR (*Caprimulgus europæus*).—Four times; all prior to 1928.

KINGFISHER (*Alcedo atthis*).—A fairly frequent visitor, appearing mainly in autumn and winter. It has been seen most frequently in St. James's Park and Kensington Gardens, and by the Regent's Canal.

GREEN WOODPECKER (*Picus viridis*).—At one time a rather uncommon visitor, but now fairly frequent in Kensington Gardens. It has occurred in other parks.

GREAT SPOTTED WOODPECKER (*Dendrocopus major*).—Resident in small numbers. Prior to 1928 it was known to breed only in the grounds of Holland House, but it has increased and spread since. The species was first proved to breed in Kensington Gardens in 1940, and it now nests there in most years. It is seen in Hyde Park from time to time, and has attempted to nest on at least one occasion. It has occurred more frequently in Battersea

Park in recent years, and probably bred there in 1949 and 1950. In 1946 nesting was suspected in Campden Hill, and in 1950 a hole was excavated in Ranelagh Gardens. The species is occasionally seen outside these areas.

LESSER SPOTTED WOODPECKER (*Dendrocopus minor*).—Occasional, mainly occurring in autumn and winter. Most records are of birds seen in Kensington Gardens and Hyde Park, but it has also been recorded from Regent's Park, Primrose Hill and Campden Hill.

WRYNECK (*Jynx torquilla*).—Twice, about 1918 and in 1924.

CUCKOO (*Cuculus canorus*).—Passage-migrant in small numbers. Birds have been seen in the breeding season, but the only breeding record was in 1905, when a young bird was reported as having been hatched in a Robin's nest in Regent's Park.

LITTLE OWL (*Athene noctua*).—Seen frequently at all seasons, (though mainly in autumn and winter), in the parks, on the bombed sites, and occasionally perching on roof-tops.

TAWNY OWL (*Strix aluco*).—Resident. Definite breeding records are few, but it probably nests in most years in the grounds of Holland House, Kensington Gardens, Hyde Park, Regent's Park and Battersea Park. It is seen and heard at times in many other parts of the area, usually where there are squares or large gardens, especially outside the breeding season.

BARN-OWL (*Tyto alba*).—An occasional visitor, which has been seen not only in the parks, but also flying over busy thoroughfares.

PEREGRINE FALCON (*Falco peregrinus*).—An occasional visitor, occurring at all times of the year.

MERLIN (*Falco columbarius*).—Twice, 1936 and 1943.

KESTREL (*Falco tinnunculus*).—Resident and widely distributed. There has been a noticeable increase in the last twenty years or so. Although pairs had been seen frequenting suitable buildings during the breeding season since at least 1924, breeding for the area was not proved until 1931 when a nest was found at St. Paul's School, Hammersmith. The birds were said to have nested there before, and there was further evidence of nesting in 1932. A pair frequented the Victoria Tower of the House of Lords in 1936 and later a fledgling was found which had probably hatched there. The site was used again in 1950. Between 1936 and 1941 a pair haunted the tower of the Imperial Institute during the breeding season, and may have nested. The devastation created in the City by the air-raids of 1940 perhaps helped the species to establish itself. A pair reared young in a bombed building north of Dean's Lane in 1946 and possibly in 1947, and birds were also seen were suspected of breeding in Inner London, and in 1950 at least visiting the towers of churches near by. In 1948 at least six pairs

were suspected of breeding in Inner London, and in 1950 at least five pairs are known to have bred or attempted to do so. One of these pairs, which was unsuccessful, used the old nest of a Carrion-Crow in a tree in Battersea Park (J. N. A. Rignall). All the other recorded nests have been on buildings. Observations suggest that in Inner London the Kestrel preys to a large extent on the House-Sparrow.

BUZZARD (*Buteo sp.*).—Seen flying over on rare occasions.

SPARROW-HAWK (*Accipiter nisus*).—A frequent visitor, occurring mostly in autumn and winter. It is usually seen in the parks, but has been reported from Cripplegate and elsewhere.

COMMON HERON (*Ardea cinerea*).—A regular visitor to the Long Water and Serpentine, the lakes in Regent's and Battersea Parks, and less often to other waters. It is more frequent in winter.

BEWICK'S SWAN (*Cygnus bewickii*).—Once, 1948.

MUTE SWAN (*Cygnus olor*).—Resident. Breeds in small numbers on lakes in the parks. Common on the Thames at all seasons, being particularly numerous near refuse-tips.

GEESE (*Anser sp.*).—Skeins occasionally fly over in winter. There are three records of White-fronted Geese (*Anser albifrons*) and others of geese not specifically identified.

SHELD-DUCK (*Tadorna tadorna*).—Once, 1943.

MALLARD (*Anas platyrhynchos*).—Resident, numbers increasing in winter. It breeds freely in all the parks where there is water, and it has been known to do so in other open spaces. Birds frequently nest in holes in trees, usually well above ground, and also on roofs of tall buildings. Broods have been reared on emergency water tanks on the bombed sites since 1941. Breeding has also been recorded from the Surrey Docks, and in 1939, while the new Waterloo Bridge was under construction, a pair nested amongst the timbers.

Many Mallard seem to wander from park waters in mid-March, and at about this time they start to appear on the bombed sites and become commoner on the river and elsewhere. After mid-July few are found away from the park waters.

A good deal of bread, etc., is obtained from the public. Fish are occasionally eaten, and E. O. Höhn (*London Bird Report* for 1947, 36-38) has given details of other food taken.

Counts on the Serpentine, Round Pond and elsewhere do not support the popular theory that there is a great excess of drakes over ducks.

GADWALL (*Anas strepera*).—Gadwall have been kept in St. James's Park for many years, and their offspring have been allowed to go unpinioned. In view of this it is difficult to say whether birds seen on other park waters are of wild origin.

TEAL (*Anas crecca*).—An occasional winter visitor to the parks and less frequently to the Thames.

WIGEON (*Anas penelope*).—Formerly an uncommon hard weather visitor. Odd birds have been seen more regularly in some of the parks in recent winters and a young drake which joined the pinioned Wigeon in St. James's Park late in 1949 has now become a resident.

PINTAIL (*Anas acuta*).—Rare winter visitor; twice in 1942 and once in 1946.

SHOVELER (*Spatula clypeata*).—An occasional visitor to the parks on passage. There appear to be no records prior to 1939, since when there have been six.

COMMON POCHARD (*Aythya ferina*).—A few full-winged Pochard are present throughout the year in St. James's Park, where pinioned birds are also kept. Pinioned Pochard bred annually in the Park prior to 1929, and in that year a full-winged bird brought off a brood of five. In 1944 four unpinioned females nested: they were mated to pinioned drakes. Although nesting still takes place annually in the Park, it does not occur elsewhere in Inner London, and its persistence in this one locality may be dependent on the presence of pinioned birds or unpinioned park-bred offspring. As winter visitors, Pochards are more common than formerly. They are now regular on the Round Pond, and have been noted on the Serpentine. An increase in numbers is apparent in St. James's Park in winter, and birds often occur in Regent's Park and occasionally in Battersea Park. Flocks are at times seen on the river.

TUFTED DUCK (*Aythya fuligula*).—Resident, occurring in much greater numbers in winter. A scarce winter visitor prior to 1900, the species increased enormously during the earlier part of the century. Breeding appears to date from 1910, when a full-winged duck with presumably a pinioned mate reared young in the Zoo. About 1912 a brood was seen in Victoria Park and by 1913 it was stated that full-winged birds were nesting freely in the London parks. From 1924 until at least 1938 Tufted Duck nested regularly in Hyde Park and Kensington Gardens. In 1933 49 ducklings were counted there, but less success was achieved in later years, and now breeding has ceased altogether. In St. James's Park unpinioned birds have been breeding apparently since 1925, and this has been the main breeding locality of the species in the area for many years. In 1950, however, no young were reared, due mainly, it seems, to rats taking the eggs. Breeding in Regent's Park was recorded only in 1925, 1939 and 1944. Young were seen in the gardens of Buckingham Palace in 1925 and 1926. In Victoria Park broods were hatched in 1937 and 1950 and probably in other years. Ten young were seen in

Southwark Park in 1939 (E. O. Höhn). As a winter visitor the bird is more widely distributed. It is sometimes seen on the Thames, especially when park waters are frozen. Numbers in St. James's Park in winter often exceed 400. Birds ringed here have been recovered from Sweden, Finland and the U.S.S.R.

SCAUP-DUCK (*Aythya marila*).—Formerly uncommon, now a regular winter visitor to the parks in small numbers, often staying until April. Birds usually associate with Tufted Ducks and accept bread from the public.

GOLDENEYE (*Bucephala clangula*).—A rather infrequent winter visitor to the parks, but often staying for a few days.

LONG-TAILED DUCK (*Clangula hyemalis*).—A female or immature bird which frequented St. James's Park between March 23rd and July 24th, 1947, was presumably the same bird as that seen at Regent's Park on July 16th and on the Thames during the same period. In St. James's Park it became tame enough to take bread thrown by visitors.

COMMON SCOTER (*Melanitta nigra*).—A rare visitor, which has been observed on the Thames, in Kensington Gardens and in Regent's Park.

GOOSANDER (*Mergus merganser*).—A rare winter visitor, five times.

RED-BREASTED MERGANSER (*Mergus serrator*).—Three times on park waters, 1922, 1933 and 1950.

SMEW (*Mergus albellus*).—A rare winter visitor to park waters.

CORMORANT (*Phalacrocorax carbo*).—An occasional visitor, usually in winter. Birds are most often seen flying over, but they also occur on the river. When Cormorants were kept in St. James's Park wild birds would sometimes visit the lake.

SHAG (*Phalacrocorax aristotelis*).—A rare autumn and winter visitor.

GANNET (*Sula bassana*).—Once, 1941.

PETREL (*Hydrobates* or *Oceanodroma* sp.).—A petrel, species not determined, was seen in 1947. Another was picked up in Battersea Park on November 24th, 1949, but as it was not examined by a qualified ornithologist, the species was again not determined.

GREAT CRESTED GREBE (*Podiceps cristatus*).—An irregular but frequent visitor to the waters in Hyde Park and Kensington Gardens. It has occurred less frequently in Regent's Park and at least once in St. James's Park.

RED-NECKED GREBE (*Podiceps griseigcna*).—Twice, 1937 and 1950.

SLAVONIAN GREBE (*Podiceps auritus*).—One was seen on the Thames at Chelsea in 1917 (*The Field*, 129, 313 and 385). Three other occurrences, 1934, 1937 and 1950.

BLACK-NECKED GREBE (*Podiceps nigricollis*).—A rare visitor; five times.

LITTLE GREBE (*Podiceps ruficollis*).—Bred in St. James's Park early in the century, but in 1914, and for some years after, the lake was drained. Nesting did not take place again in the Park until 1939, when sticklebacks were introduced. Grebes bred there again in 1940 and 1945, but have not done so since. The periodical draining and cleaning of the lake interferes with their supply of food and nesting material. Breeding took place on the Regent's Park lake from 1927 to 1929, and the species appears to nest regularly in the grounds of Buckingham Palace. Birds occur, mainly on the lake in St. James's Park and the Round Pond, outside the breeding season, especially in autumn.

RED-THROATED DIVER (*Colymbus stellatus*).—Three times, 1934, 1941 and 1948.

WOOD-PIGEON (*Columba palumbus*).—Resident. One of the most numerous breeding species in the area, its numbers at the present time being exceeded only by those of the House-Sparrow, the domestic pigeon, and perhaps the Starling. Holte Macpherson has stated that there were probably not more than eight pairs in the whole of the area in 1886, but that an astounding increase occurred in the next eight years. They soon became remarkably tame, contrasting strikingly with their wary behaviour elsewhere, and prior to the recent war, during which their numbers were considerably reduced by shooting, they fed readily from the hand. Although the Wood-Pigeon population has now recovered much of its numerical strength, it has yet to regain this degree of tameness. It nests in trees in parks, squares and gardens, frequently in trees in the street, and also at times on buildings. A pair nested on a girder in St. James's Park station from 1913 to 1918. Most birds leave the area after the breeding season, but return in December and January to take up their breeding territories. In winter large communal roosts are formed, usually in trees in the parks (on the islands in the lakes of Hyde Park, Regent's Park and Battersea Park, and by the side of the Long Water in Kensington Gardens), but smaller roosts have been reported in trees in Ladbroke Square, along the Embankment, and in Postman's Park in the City. This species is not known to roost on buildings, but it perches on them freely (usually on chimneys or roofs, rather than on ledges like the domestic pigeon) and often uses them for singing and display. It will feed in quiet streets, and has been noticed searching for food on the railway-lines outside Waterloo. Unlike the domestic pigeon it rarely forages

on the Thames mud. Wood-Pigeons are probably less common south of the river, though numbers may be seen at Surrey Commercial Docks. Large flocks pass over the area in autumn.

STOCK-DOVE (*Columba œnas*).—Resident, a few pairs breeding in Kensington Gardens. It used to nest in the grounds of Holland House, and probably still does so. In 1950 two or three pairs attempted to nest in Battersea Park. The species is rare elsewhere.

DOMESTIC PIGEON (*Columba livia*).—Resident; the second most numerous breeding bird in Inner London, nesting throughout the built-up area in holes and on ledges of buildings, and on the girders, etc., underneath bridges over the Thames and elsewhere. In London pigeons frequently perch in trees in some parks and squares. They roost on buildings, often, in the Trafalgar Square area, with Starlings. They are very tame, feeding even in busy streets, in markets, docks, railway stations, parks, squares and along the Thames mud.

TURTLE-DOVE (*Streptopelia turtur*).—An occasional visitor to the parks and gardens usually on spring or autumn passage, but sometimes during the summer.

BLACK-TAILED GODWIT (*Limosa limosa*).—Once, 1917.

CURLEW (*Numenius arquata*).—Frequently heard passing over at night at times of migration, and occasionally seen in daytime. Also seen or heard occasionally in winter.

WHIMBREL (*Numenius phæopus*).—Heard passing over on a few occasions.

WOODCOCK (*Scolopax rusticola*).—A fairly frequent accidental visitor.

COMMON SNIPE (*Capella gallinago*).—Occasionally reported from the parks, usually in winter.

JACK SNIPE (*Lymnocryptes minimus*).—Rare visitor; three times, 1903 (or 1904), 1934 and 1945.

TURNSTONE (*Arenaria interpres*).—Once, 1950.

DUNLIN (*Calidris alpina*).—An occasional passage-migrant, but three winter records, 1925, 1938 and 1939. A dead bird found in 1938 was identified as *C. a. alpina*.

COMMON SANDPIPER (*Actitis hypoleucos*).—A regular passage migrant in small numbers, visiting waters in the parks and the Thames mud.

GREEN SANDPIPER (*Tringa ochropus*).—Once, two passing over Hyde Park, 1947.

REDSHANK (*Tringa totanus*).—Occasionally seen or heard on passage. It has been seen in the parks on rare occasions.

RINGED PLOVER (*Charadrius hiaticula*).—Twice. One by the Thames mud at Millbank in March, 1917 (Walter Johnson, *Animal Life in London*, p. 102) and one, Kensington Gardens, 1940.

GOLDEN PLOVER (*Pluvialis apricaria*).—Very occasionally noted passing over the area.

LAPWING (*Vanellus vanellus*).—Several records of flocks or single birds passing over, and a few of birds actually alighting in the parks. Most of the occurrences have been in winter but Lapwings have been seen in all months except September. Winter movements are often, but not always, connected with hard weather.

OYSTER-CATCHER (*Haematopus ostralegus*).—Twice, 1929 and 1934.

BLACK TERN (*Chlidonias niger*).—Twice, 1935 and 1950.

SANDWICH TERN (*Sterna sandvicensis*).—Twice; one in Hyde Park on September 2nd, 1908 ("P.J.M.", *Countryside*, vol. 7, p. 220), and one at the Round Pond on September 11th, 1937 (H. de Sales la Terriere, *The Field*, vol. 170, p. 888).

COMMON TERN (*Sterna hirundo*).—There are several records of this species having been seen on passage, usually visiting park waters, but also occasionally the Thames. Whereas some of these birds were seen by competent observers, and were correctly identified, there may have been some terns, especially amongst the autumn migrants, which were Arctic Terns (*S. macrura*). There are, however, no definite records of this latter species.

LITTLE GULL (*Larus minutus*).—Three times, 1936, 1945 and 1950.

BLACK-HEADED GULL (*Larus ridibundus*).—By far the commonest of London gulls, occurring mainly between mid-July and mid-March. During recent years not only immature birds but occasionally adults in summer plumage have made appearances on the river during the breeding season. The existence of a breeding colony at Perry Oaks Disposal Works (c. 15 miles from Charing Cross) which has been established since about 1944 may account for these occurrences. During the last few years most of the birds seen in St. James's Park during August and September have been juveniles. This again may be due to the close proximity of the Middlesex gullery. The return to the river begins late in June. Birds also reappear in St. James's Park at about this time, but tend to be later in the other parks. There is a noticeable influx of birds at the end of October on the river, in the parks, and over the built-up area generally.

It is not until this autumn invasion takes place that birds are found frequenting buildings in the hope of receiving food thrown from windows or put out on window-sills. This habit was noticed as early as 1917, and it has now become common, the birds

frequently alighting on the sills to take scraps. The habit of landing in the streets to retrieve food was also noted as early as 1917, and appears to have increased in recent years.

Recoveries of Black-headed Gulls ringed in St. James's Park and elsewhere have shown that there is a tendency for birds to return to the same winter feeding stations year after year (T. L. Bartlett, *London Bird Report* for 1943, p. 19). Ringing returns have also shown that the winter population includes birds which summer in the Baltic countries.

Normally the Black-headed Gulls frequenting the built-up area during the daytime fly off to the reservoirs to roost, and this applies equally to the other gulls.

The habit of perching in trees has been frequently noted in St. James's Park and occasionally elsewhere.

COMMON GULL (*Larus canus*).—A winter visitor, occurring mainly from October to March. Its numbers increased during the first quarter of the century. It does not approach human beings for food, preferring to employ skua-like tactics against Black-headed Gulls which have accepted a morsel too large to be immediately swallowed. This behaviour was noted in St. James's Park as early as 1927 (R. W. Pethen). The habit is now a common one, and attacks are also made on members of its own species and on Mallard. There is some evidence of passage through the area during May, after the departure of the winter residents.

HERRING-GULL (*Larus argentatus*).—Mainly a winter visitor, but does occur at other seasons. It rarely visits the park waters in any numbers, but an increase may be noted in hard weather, and unusually large flocks of up to sixty were seen on the Round Pond between January 16th and February 10th, 1948, when the weather was not particularly severe. Smaller numbers were also seen during January and early February, 1949. The species feeds on the Thames mud, on garbage dumps and barges, and some wait for scraps of fish in Billingsgate Market.

LESSER BLACK-BACKED GULL (*Larus fuscus*).—Occurs mainly as a passage migrant, from mid-March to early May and from late June or early July until early November. A few immature birds are present throughout the summer. Birds were noted in the area in winter as early as 1913, but do not seem to have become regular winter residents until the early 1930's. Lesser Black-backs do not visit the parks to the extent that the three preceding species do, being confined mainly to the river. Birds of the Scandinavian race (*L. f. fuscus*) are not infrequently observed outside the breeding season.

GREAT BLACK-BACKED GULL (*Larus marinus*).—A common winter visitor to the Thames, and occurring not infrequently in summer. It is seen at times in the parks. Formerly uncommon,

it began to be seen more often in the mid-twenties, and by 1929/30 it was occurring regularly. In 1943 it was found on the Thames in numbers of up to a dozen, and had been recorded in every month of the year (R. S. R. Fitter, *antea* vol. xxxvi, 163-4). The species is now surprisingly frequent as a winter visitor, and on January 29th, 1950, adults alone numbered over a hundred along the river between Limehouse and Wandsworth. The birds scavenge on the mud and on the refuse dumps and barges, and in the vicinity of Billingsgate Market they perch freely on the buildings and come down to forage in the fish-market.

GLAUCOUS GULL (*Larus hyperboreus*) and ICELAND GULL (*L. glaucoides*).—Records for these two species are given together in view of the fact that until recently identification was partly influenced by field characters which were not always reliable. Records of single birds have been published as follows:—

Glaucous Gull. Three times, 1915, 1941 and 1949.

Iceland Gull. An adult and an immature bird in Kensington Gardens in 1942. In the case of the adult, the brick-red orbital ring was seen.

Glaucous/Iceland Gull. There are two records of single immature birds, the species of which was not satisfactorily determined; 1948 and 1949.

KITTIWAKE (*Rissa tridactyla*).—A rare visitor to the Thames and the parks, occurring usually in winter.

GREAT SKUA (*Stercorarius skua*).—Two birds near Waterloo Bridge on April 14th, 1915 (P. F. Bunyard, *Bulletin of B.O.C.*, vol. li, p. 104).

ARCTIC SKUA (*Stercorarius parasiticus*).—Three times, 1916, December, 1920/January, 1921 and 1935.

RAZORBILL (*Alca torda*).—Twice on the Thames, 1911 and 1948. An immature bird frequented the Round Pond in 1948.

GUILLEMOT (*Uria aalge*).—Twice, 1930 and 1933. The latter bird was identified after death as a female of the Northern race (*U. a. aalge*).

LITTLE AUK (*Alle alle*).—Once, 1929.

PUFFIN (*Fratercula arctica*).—A rare accidental visitor.

CORN-CRAKE (*Crex crex*).—Birds, evidently on autumn passage, have occasionally been picked up dead or exhausted, and one was heard calling on Primrose Hill on August 22nd, 1938. There are also two winter records.

WATER-RAIL (*Rallus aquaticus*).—Three times, 1924, 1936 and 1944.

MOORHEN (*Gallinula chloropus*).—Resident, breeding in all the parks with lakes, where it is very tame. Its numbers are increased in winter. It is observed very occasionally on the river.

COOT (*Fulica atra*).—Resident, up to a dozen pairs breeding annually in St. James's Park. It bred in Kensington Gardens in 1937 and attempted to do so in 1950. In 1938 it nested in Hyde Park. Nesting took place in Regent's Park in 1949, but the eggs were stolen. The Coot is a comparatively recent addition to the breeding birds of the area, the first recorded nest being in 1926 in St. James's Park. About this time the authorities brought eggs from Richmond Park and placed them in Moorhens' nests in the central parks, as the wintering birds would not stay to breed. Numbers increase considerably in winter, and it is more widespread at this season.

PHEASANT (*Phasianus colchicus*).—Pheasants have been kept in the past in semi-captivity in the grounds of Holland House, the gardens of Buckingham Palace and in certain of the Royal Parks. This probably accounts for the birds seen occasionally elsewhere during this period. Odd birds are still reported from time to time, and are presumably wanderers from outside the area.

COMMON PARTRIDGE (*Perdix perdix*).—A rare visitor.

QUAIL (*Coturnix coturnix*).—There are two records which probably refer to genuine migrants; 1915 and 1947. A bird caught alive in 1906 (or 1907) was thought to have been an escape, as at that time live Quails were being imported for food.

ERRATA.

- p. 18. The notes on the species rarely photographed (xxv—Long-tailed Skua) should be signed J.D.W.
- p. 29. At the foot of the note by B. Metcalfe, add "From this description it is clear that the birds were Short-toed Larks (*Calandrella brachydactyla*)."
- p. 78. (Review of *Grønlands Fugle*—Pt. II). Line 1, for "Salomensen" read "Salomonsen".
- p. 216. The notes on the species rarely photographed (xl—Snow-Bunting) should be signed J.D.W.
- p. 273. (*Ringing Report*). At the top of the page, under "Blackbird", for "OE. 747" read "Witherby OE. 747".
- p. 275. (*Ringing Report*). Under "Swallow", in the second record, for "L.K. 620" read "Witherby L.K. 620".
- p. 333. (Footnote to *Yellowshank in Cheshire*). In lines 11 and 12, for "Loch Crinan" read "Loch Crerar", and for "November 3rd, 1950" read "March 3rd, 1951".
- p. 372. (*Lesser Black-backed Gull breeding in Kent*). In line 4 of this note, for "has often attempted to nest" read "used to breed regularly, and still attempts to do so," and in line 5 of this note, for "country" read "county".

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLVI. THE BRENT GOOSE.

Photographed by NIALL RANKIN.

(Plates 85-88).

THE Brent (*Branta bernicla*) is among the smallest of the geese and has a wider distribution than the others of its genus, breeding in the Arctic regions of Asia, America and Europe, including in this range Greenland and Spitzbergen, while to the coasts of N. and W. Europe and of the United States it is a regular winter visitor. These fine photographs, for which we are indebted to Mr. Niall Rankin, were taken on Southampton Island, Northwest Territories, Canada, and show a pair with two grey young in a typical nesting habitat close to water. These birds are of the Pale-breasted form (*B. b. hrota*), which nests in Eastern Arctic Canada, in Greenland and in Spitzbergen. Two other races are generally recognised, and one of these—the Dark-breasted (*B. b. bernicla*), from the islands and coasts of Russia and western Siberia—is, like the Pale-breasted, a regular winter visitor to Britain. The third race, the Pacific Black Brant (*B. b. nigricans*) breeds in north-western Canada, Alaska and the northern coasts of E. Siberia, and winters largely on the shores of the north Pacific. All three races are small and dark with black on the head and breast and a small white patch, absent in the juvenile, on each side of the neck, these being extended in *nigricans* to form an almost complete white collar. This last race is the darkest of the three, both above and below.

In this country, where most of the Brent Geese arrive in late October and leave in March (though some arrive in late August and stragglers remain here until May, or—very occasionally—even June), the two forms *hrota* and *bernicla* mix to a certain extent, but the Dark-breasted form seems to predominate down most of the east coast of Scotland and England from the Tay Estuary to Essex, and in the south-east, where the species is, however, less numerous; in the north (scarcer) and west of Scotland, including the isles, and in Ireland the Pale-breasted form is chiefly to be found. In Wales, and in west and south-west England, both occur, but the species is much less common. The exact winter distribution and the proportions of the two races in Britain are not yet fully known and there is ample scope for investigation here, particularly in view of the slight change in distribution that appears to be occurring. This is shown by the species' virtual disappearance from Belgium since 1944—which is paralleled in England by its post-war scarcity on the south-coast. The birds are seldom found away from the coast, and then only singly in most places, but on certain shores and mud-flats large parties occur, for the species is extremely gregarious, not only in winter, but where possible in the breeding colonies. I.J.F.-L.

BRITISH RECOVERIES OF BIRDS RINGED ABROAD.

COMMUNICATED BY

E. P. LEACH.

THE recoveries of Starling (*Sturnus vulgaris*), Black-headed Gull (*Larus ridibundus*), Common Gull (*Larus canus*), and Teal (*Anas crecca*) from Decoys, are too numerous to be included, with the exception of five records of Starlings from Poland and Russia, given in detail below.

(Among interesting recoveries in this list are a Whitethroat migrating apparently to summer quarters in Norfolk through the Frisian Isles, a Pintail recovered in Hants within three weeks of marking in Labrador, considerable numbers of Norwegian-marked waders, including Turnstone, Dunlin, Purple Sandpiper and Bar-tailed Godwit, an Arctic Tern in its seventeenth year, and an Iceland Gull from West Greenland.—Eds.)

ROOK (*Corvus frugilegus*).

RINGED AS YOUNG

		<i>Ringed</i>		<i>Recovered</i>	
M.	E184098	Jelgava, Latvia	31.5.50	Kessingland (Suffolk)	12.2.51
L.	238433	Giethoorn, (Overijssel) Holland	2.5.51	Pontefract (Yorks.)	10.4.52
L.	244051	Ditto	8.5.51	Near Retford (Notts.)	5.1.52
L.	238321	Ditto	2.5.51	Northampton	1.2.52
L.	212439	Ditto	8.5.49	Amphill (Beds.)	11.3.50
L.	162679	Ditto	4.5.49	Near Chelmsford (Essex)	12.4.50

JACKDAW (*Corvus monedula*).

L.	202530	Friesland, Holland, young	7.6.47	Near Saffron Walden (Essex)	10.1.48
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STARLING (*Sturnus vulgaris*)

RINGED IN BREEDING SEASON

M.	100190F	Rybinsk District, West Russia [58° 30' N, 37° 30' E.]	31.5.50	Kettering (Northants.)	9.3.51
M	100614F	Ditto	2.6.50	Great Yarmouth (Norfolk)	30.11.50
M.	65293F	Ditto	28.5.48	Dungeness (Kent)	7.11.48
Pol. Vars.		Dubowo, North Poland	2.6.49	Broughton (Northants.)	5.1.50
	146065F	[54° 12' N, 22° 55' E.]			
Pol. Vars.		Bialowieza, North Poland	30.6.48	Sandwich (Kent)	28.12.50
	144059F	[52° 42' N, 23° 52' E.]			

BRAMBLING (*Fringilla montifringilla*)

L.	F60255	Loosduinen, Zuid Holland, ad.	28.10.49	Saffron Walden (Essex)	29.1.50
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ROCK-PIBIT (*Anthus spinoletta littoralis*)

St.	ZOB2388	Öland, Sweden, migrant	14.9.49	Southminster (Essex)	29.11.49
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WHITETHROAT (*Sylvia communis*)

H.	9435010	Wangeroog, E. Frisian Is., migrant	29.4.52	Cley (Norfolk)	27.6.52
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FIELDFARE (*Turdus pilaris*)

RINGED AS YOUNG

		<i>Ringed</i>		<i>Recovered</i>	
Stav.	713543	Stavanger, Norway	31.5.51	Skreen (Sligo)	—.2.52
G.	B34653	Djura, Dalarna, Sweden	1.7.49	Dunford Bridge (Yorks.)	24.1.50
G.	B29275	Dalsland, Sweden	27.5.49	East Peckham (Kent)	21.1.50

ICELAND REDWING (*Turdus musicus coburni*)

Rk.	74008	South-East Iceland, ad.	21.4.51	Ballycastle (Mayo)	28.3.52
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BLACKBIRD (*Turdus merula*)

RINGED AS YOUNG

O.	031079	Skien, Norway	7.5.49	Edinburgh	13.3.50
G.	B38746	Kristinehamn, Sweden	30.6.49	Willingham (Cambs.)	30.1.50
St.	Y72462	Vänernborg, Sweden	17.5.49	Spurn Bird Obs. (Yorks.)	22.10.50
B.	8C8728	Turnhout, Belgium	30.4.51	North Molton (Devon)	—.2.52
B.	DD7487	Knocke, Belgium	30.5.49	Aberporth (Cardigan)	—.1.50

RINGED AS MIGRANTS

Stav.	10560	Jæren, S. Norway	4.11.51	Hilbre I., R. Dee (Ches.)	18.11.51
H.	7149250	East Frisian Is.	24.3.49	Nottingham	20.3.52

REDSTART (*Phœnicurus phœnicurus*)

H.	9372823	East Frisian Is., migrant	18.5.50	Holy Island (Northumb.)	11.5.51
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BLACK REDSTART (*Phœnicurus ochrurus gibraltariensis*)

H.	8705248	Halle, Saxon Anhalt, Germany, young	15.7.51	Spurn Bird Obs. (Yorks.)	27.10.51
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LONG-EARED OWL (*Asio otus*)

RINGED AS YOUNG

G.	D40622	Örebro, Sweden	13.5.50	Boroughbridge (Yorks.)	—.3.51
L.	163821	Heemskerk, Holland	4.6.44	Martlesham (Suffolk)	1945

OSPREY (*Pandion haliaetus*)

G.	E4885	Vestra Tunhem (Västergötland) Sweden, young	3.7.47	Granton-on-Spey (Moray)	22.5.49
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HERON (*Ardea cinerea*)

RINGED AS YOUNG

Stav.	20412	Hordaland, Norway [60° 15' N, 5° 8' E.]	29.5.50	North Uist, Outer Hebrides	14.12.50
O.	010878	Egersund, S. Norway	10.6.44	Brae, Shetland Mainland	29.12.50
O.	036872	Ditto	4.6.49	Bridge of Walls, Shetland Mainland	5.5.51

<i>Ringed</i>			<i>Recovered</i>	
<i>O.</i>	036877	Egersund, S. Norway	4.6.49	Leverburgh, Isle of Harris 3.2.50
<i>O.</i>	036856	Ditto	4.6.49	Caithness —.1.50
<i>O.</i>	028524	Ditto	11.6.48	Lochmore (Suth.) —.10.49
<i>O.</i>	022575	Ditto	7.6.45	Loch Carron (Ross) 1946 or 1947
<i>O.</i>	036883	Ditto	4.6.49	Peterhead (Aberdeen) 17.5.50
<i>O.</i>	036957	Ditto	10.6.51	Torphins (Aberdeen) —.2.52
<i>O.</i>	037049	Ditto	10.6.50	Central Perthshire 10.11.50
<i>O.</i>	037045	Ditto	10.6.50	Lamlash, Isle of Arran 3.10.50
<i>O.</i>	036976	Ditto	5.6.50	Walkerburn (Peebles) 31.1.51
<i>O.</i>	037043	Ditto	10.6.50	Austwick (W. Yorks.) 9.12.50
<i>O.</i>	036956	Ditto	10.6.51	Ulverston (Lancs.) 10.4.52
<i>O.</i>	036938	Ditto	10.6.51	Isle of Man 3.4.52
<i>O.</i>	036994	Ditto	5.6.50	Marlborough (Wilts.) 28.8.50
<i>O.</i>	036874	Ditto	4.6.49	Castletown-Bere (Cork) 15.1.50

WHITE-FRONTED GOOSE (*Anser albifrons flavirostris*)

Thirteen Geese marked as young or adult in West Greenland with rings of the Copenhagen Museum, were recovered during the winter of 1949-1950 in Ireland (12) and in the Isle of Islay, Argyllshire (1). Three of these were recovered in the winter following their ringing, six in the second winter, three in the third and one in the fourth. The Irish counties in which they were obtained were Donegal, Galway, Longford and Wexford. Records for the subsequent winters are not yet available.

PINK-FOOTED GOOSE (*Anser arvensis brachyrhynchus*)

Of birds ringed as young or adult in central Iceland in 1951 with rings of the Reykjavik Museum, over a hundred were recovered in the following winter and spring in the areas Solway, Ribble Estuary, Humber and Wash and in Southern and Eastern Scotland.

MALLARD (*Anas platyrhynchos*)

RINGED IN BREEDING-SEASON

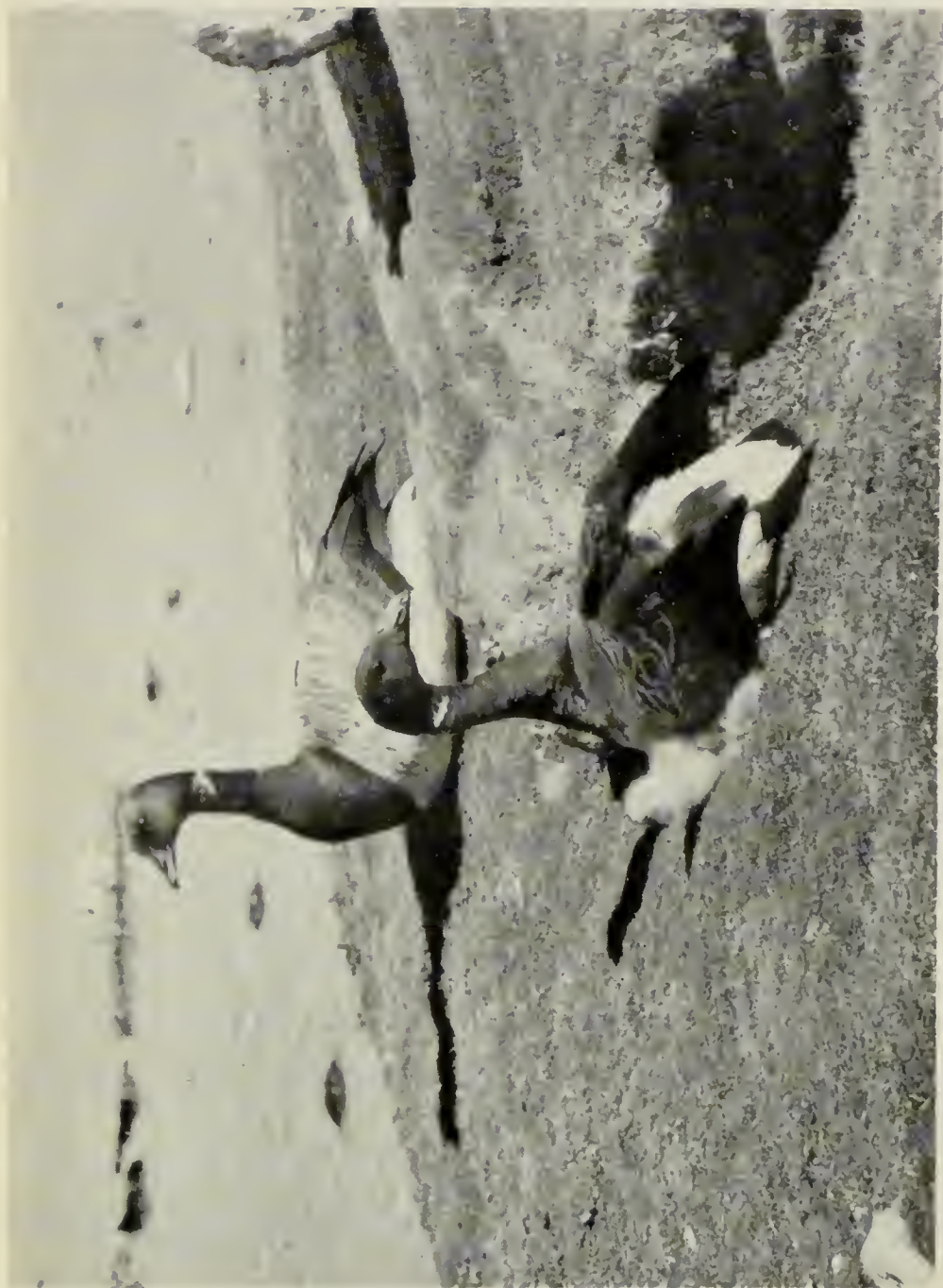
<i>Sv.J.F.</i>	19170	Swedish Lapland	20.7.49	Silloth (Cumb.) —.11.49
	(wing-clip)			
<i>B.</i>	2G968	West Flanders	9.6.51	Tees Estuary (Durham) —.8.51

RINGED AS FULL-GROWN

<i>H.</i>	351738	Mellum, Mouth of Weser, Germany	30.7.50	Abberton (Essex) 31.1.51
<i>L.</i>	205277	Friesland, Holland	—.8.50	Leigh (Lancs.) 2.12.50
<i>L.</i>	230836	Gelderland, Holland	—.1.50	R. Medway (Kent) 28.1.50
<i>L.</i>	205089	Noord Holland	20.8.49	Nottingham 31.1.50
<i>L.</i>	252996	Ditto	13.8.51	Thornton-le-Dale (Yorks.) 29.1.52
<i>L.</i>	200405	Utrecht, Holland	22.2.49	Abingdon (Berks.) —.9.50



PALE-BREADED BRENT GOOSE (*Branta bernicla hrota*).
ADULT WITH TWO GOSLINGS.
SOUTHAMPTON ISLAND, NORTHWEST TERRITORIES, CANADA.
(Photographed by NIAL RANKIN).



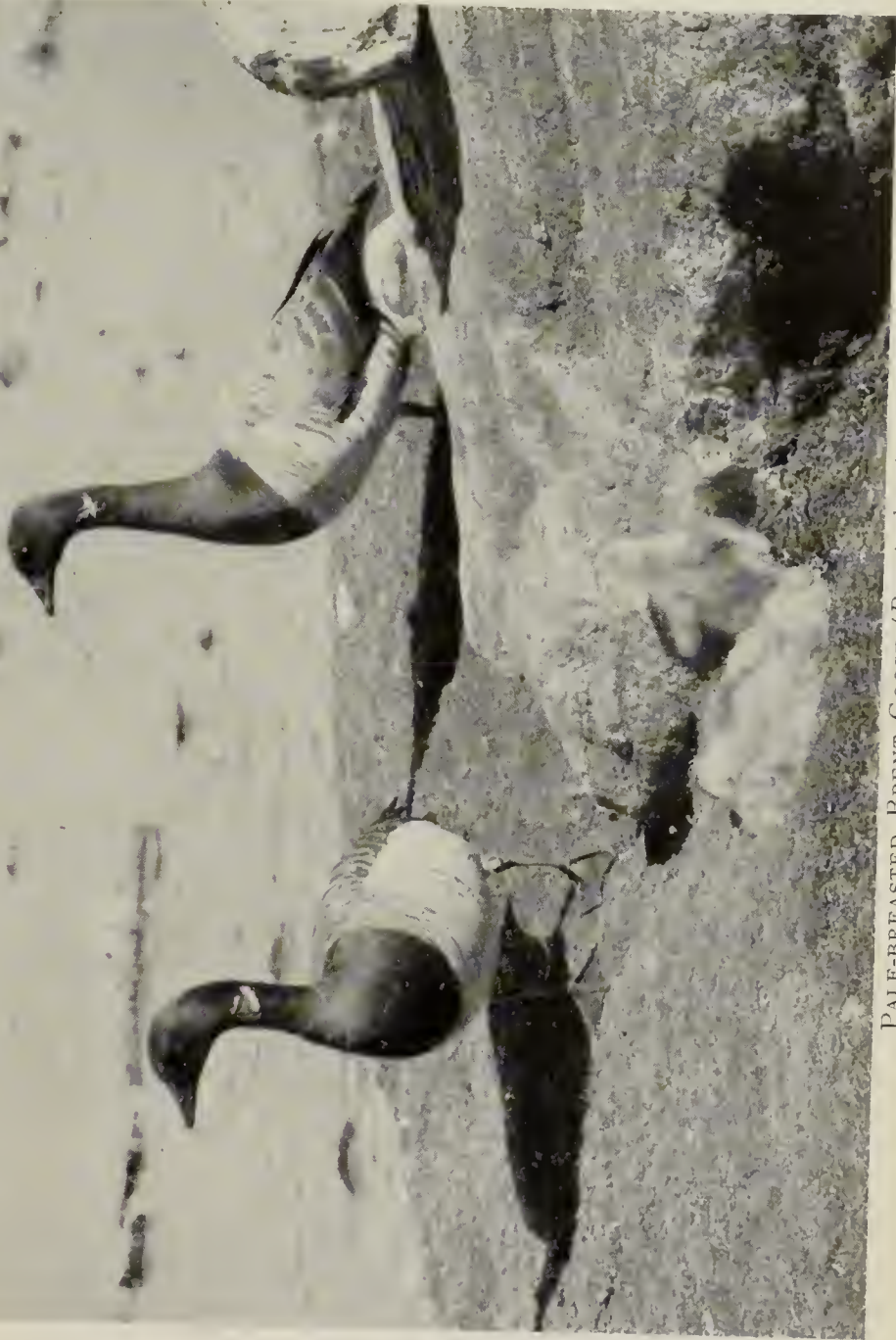
PALE-BREADED BRENT GOOSE (*Branta bernicla hrota*).

PAIR WITH GOSLINGS.

SOUTHAMPTON ISLAND, NORTHWEST TERRITORIES, CANADA.

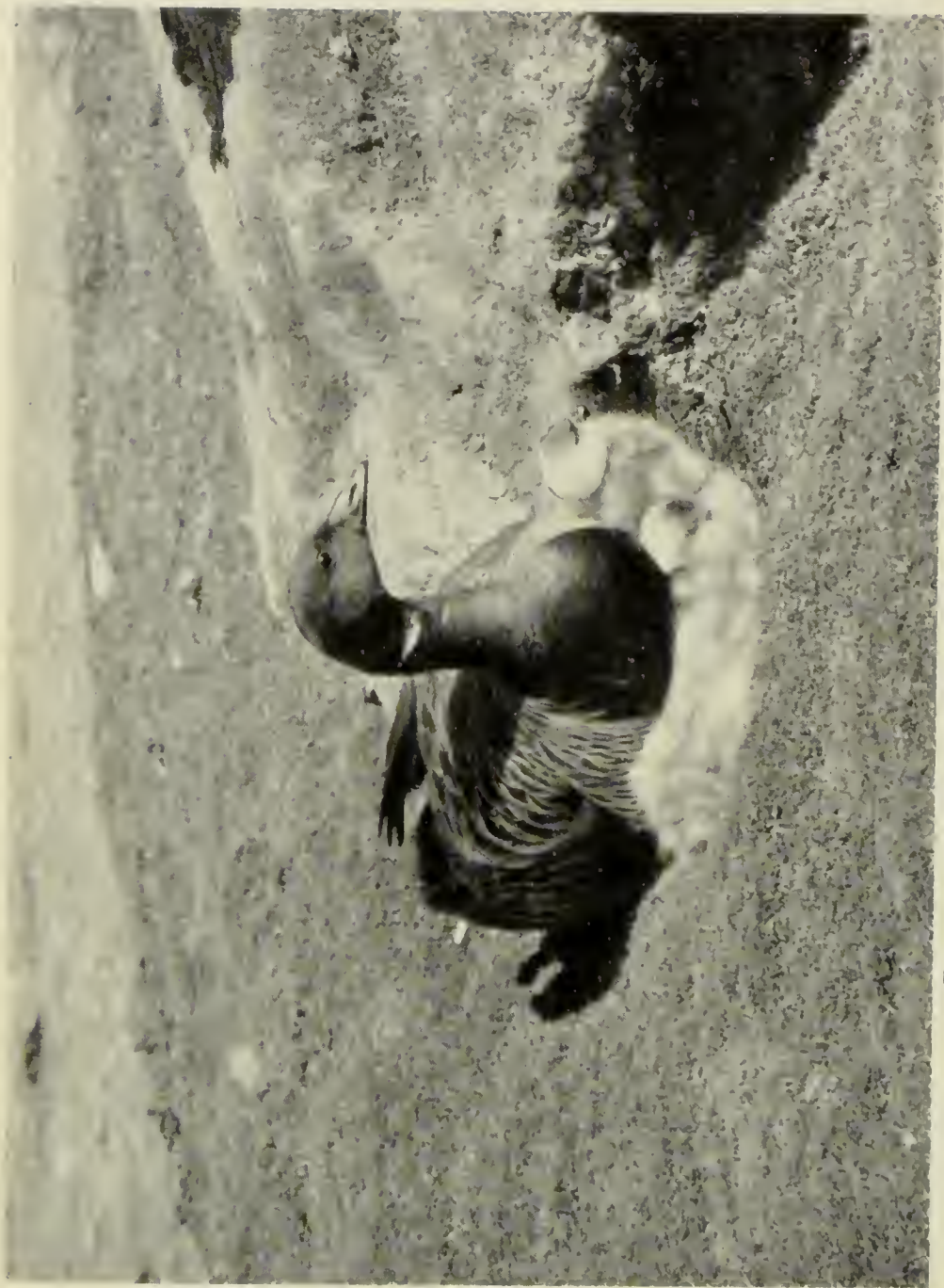
(Photographed by NIALL RANKIN).





PALE-BREASTED BRENT GOOSE (*Branta hutchinsii*).
PAIR WITH GOSLINGS.

SOUTHAMPTON ISLAND, NORTHWEST TERRITORIES, CANADA.
(Photographed by NIAL RANKIN).



PALE-BREADED BRENT GOOSE (*Branta bernicla hrota*).

ADULT BROODING GOSLINGS.

SOUTHAMPTON ISLAND, NORTHWEST TERRITORIES, CANADA.

(Photographed by NIALL RANKIN).



GADWALL (*Anas strepera*).

RINGED AS FULL-GROWN

Ringed

Recovered

Rk.	4.2375	Myvatn, Iceland	21.6.46	Duncormick (Wexford)	1.1.50
L.	240079	Zwartemeer (Overijssel) Holland	11.7.50	Cantley (Norfolk)	5.10.50

TEAL (*Anas crecca*)

RINGED IN BREEDING-SEASON

Rk.	5.3776	North Iceland, ad.	16.8.49	R. Bandon (Cork)	13.12.49
Rk.	43467	Ditto	28.7.50	Kingussie (Inverness)	28.12.50
Rk.	Booo302	West Iceland	22.8.49	Aldeburgh (Suffolk)	—.12.50
O.	030153	Hardanger, Norway	18.7.49	Bridgewater (Somerset)	25.1.50
Sv.J.F.	23378 (wing-clip)	Swedish Lapland	13.7.50	Peplow (Salop)	12.1.52
Sv.J.F.	13761 (wing-clip)	Ditto	8.7.48	Wicklow	12.12.49
Sv.J.F.	26792 (wing-clip)	Jämtland, Sweden	5.8.51	Ringwood (Hants.)	4.1.52
Sv.J.F.	C335 (wing-clip)	Öland, Sweden, ad.	29.7.49	Towyn (Merioneth)	19.1.50
St.	UO1041	Ditto	28.8.51	Ballybay (Monaghan)	9.12.51

GARGANEY (*Anas querquedula*)

RINGED AS FULL-GROWN

B.	2E7198	Near Bruges, Belgium	19.8.51	Bardney (Lincs.)	31.8.51
L.	227086	Piaam (Friesland) Holland	18.8.48	Maryborough (Leix)	20.1.49

WIGEON (*Anas penelope*)

RINGED AS YOUNG

Rk.	43233	Myvatn, N. Iceland	2.9.49	Bilbster (Caithness)	—.11.49
Sv.J.F.	4166 (wing-clip)	Laxsjö (Jämtland) Sweden	20.6.50	Castle Blayney (Monaghan)	25.11.51

RINGED AS FULL-GROWN

M.	130353D	Astrakhan, S. Russia	30.7.48	Montrose (Angus)	2.1.51
M.	130548D	Ditto	30.8.48	Skegness (Lincs.)	3.1.51
L.	240002	Kampen (Overijssel) Holland	21.7.49	Market Deeping (Northants.)	2.9.49
L.	203179	Lekkerkerk, Zuid Holland	8.3.47	Montrose (Angus)	23.1.51

PINTAIL (*Anas acuta*)

U.S.A.	506-65268	Hamilton Inlet, Labrador, juv.	7.9.51	Near Christchurch (Hants.)	25.9.51
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SHOVELER (*Spatula clypeata*)

Rk.	43483	North Iceland, young	16.7.51	Upper Lough Erne (Fermanagh)	3.9.51
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TUFTED DUCK (*Aythya fuligula*)

RINGED AS YOUNG

		<i>Ringed</i>	<i>Recovered</i>
<i>Rk.</i>	B000365	N. Iceland	11.7.50 Newtown Butler (Fermanagh) 16.12.50
<i>Rk.</i>	3.1735	Ditto	12.7.47 L. Erne (Fermanagh) 1.12.51
<i>Rk.</i>	B000173	Ditto	27.7.49 Upper L. Erne (Fermanagh) 15.10.51
<i>Rk.</i>	A000565	Ditto	16.7.49 Wexford 29.2.52

RINGED AS FULL-GROWN

<i>C.</i>	494326	Near Copenhagen, Denmark	17.4.50 Cliffe Marshes (Kent) 1.12.51
<i>Rk.</i>	3.1749	N. Iceland	24.7.47 Gort (Galway) —.3.51
<i>Rk.</i>	4.2586	Ditto	23.6.48 L. Corrib (Galway) 11.2.51
<i>Rk.</i>	4.2391	Ditto	23.6.48 Tuam (Galway) 27.12.51
<i>Rk.</i>	4.2900	Ditto	12.7.47 Ennis (Clare) 18.11.49

SCAUP-DUCK (*Aythya marila*)

RINGED IN BREEDING-SEASON

<i>Rk.</i>	A000844	N. Iceland	16.8.49 Mugdrum I., River Tay 1.9.50
<i>Rk.</i>	A000461	Ditto	6.8.47 Barnes, London 5.3.50
<i>Rk.</i>	3.2612	Ditto, ad.	23.6.47 Londonderry 14.2.50
<i>Rk.</i>	33099	Ditto	12.7.50 Belmullet (Mayo) 30.3.51
<i>Rk.</i>	A000654	Ditto	23.7.49 Clonderlaw Bay (Clare) —.1.50

GOLDENEYE (*Bucephala clangula*)

RINGED IN BREEDING-SEASON

<i>Sv.J.F.</i>	1525	Torne, Lapland, ad.	1.6.49 Near Tadcaster (Yorks.) —.2.50
<i>Sv.J.F.</i>	14207	Hörmundsjö, Dalarna, Sweden	8.6.48 Near Dundee 25.2.51

CORMORANT (*Phalacrocorax carbo*)

<i>C.</i>	290761	Horsens Fjord, Jutland, Denmark, young	16.6.46 Near Carlisle (Cumb.) 1.3.47
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OYSTER-CATCHER (*Hematopus ostralegus*)

RINGED AS YOUNG

<i>C.</i>	494105	Færoes	12.7.49 Heswall (Ches.) 26.12.49
<i>Stav.</i>	42236	Sogne, Norway	27.6.48 Padstow (Cornwall) 3.7.50

LAPWING (*Vanellus vanellus*)

RINGED AS YOUNG

<i>Stav.</i>	20760	Jæren, S. Norway	24.5.50 Roscommon 10.12.50
<i>Stav.</i>	62080	Ditto	6.6.44 Trim (Meath) 15.1.52
<i>Stav.</i>	22168	Ditto	21.5.51 Clonmines (Wexford) 20.2.52
<i>G.</i>	C51082	Gotland, Sweden	4.6.47 Ballinasloe (Galway) 30.11.50
<i>G.</i>	C49918	Morup (Halland) Sweden	15.5.49 Crookedwood (Westmeath) —.12.49
<i>St.</i>	X10891	Malmö, S. Sweden	9.5.48 Kilkhampton (Cornwall) 3.1.51

		<i>Ringed</i>		<i>Recovered</i>	
St.	X10187	Viby, S. Sweden	20.5.48	Edenderry (Offaly)	—2.50
C.	691980	Korsör (Zealand) Denmark	14.5.50	Rathdowney (Leix)	—11.50
C.	Z26575	Ditto	13.5.48	Kildare	16.1.50
C.	690930	Limfjord (Jutland) Denmark	17.6.48	L. Sheelin (Cavan)	15.1.50
Sk.	S23797	Hundborg (Jutland) Denmark	31.5.48	Cantley (Norfolk)	11.2.52
B.	2E6518	West Flanders	20.5.51	Valley, Anglesey	10.1.52

RINGED AS FULL-GROWN

L.	191420	Friesland, Holland	20.11.45	Wingham (Kent)	30.1.50
L.	190767	Zuid Holland	12.3.44	Near Sale (Ches.)	11.11.45
L.	195241	Ditto	5.6.46	Spalding (Lincs.)	14.11.46
L.	181767	Ditto	2.11.40	Sandwich (Kent)	27.12.48
L.	194260	Ditto	30.11.46	Honiton (Devon)	14.11.47
L.	180217	Ditto	11.3.39	Kildysert (Clare)	—1.45
L.	217584	Ditto	5.3.50	Ballylongford (Kerry)	25.10.50

TURNSTONE (*Arenaria interpres*)

Stav.	88168	Jæren, S. Norway migrant	16.8.48	Kings Lynn (Norfolk)	—3.49
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KNOT (*Calidris canutus*)

RINGED AS MIGRANTS

Stav.	88615	Jæren, S. Norway	18.8.48	Grangemouth (Stirling)	21.1.50
Stav.	12714	Ditto	3.9.49	Budle Bay (Northumb.)	20.4.50
Stav.	12805	Ditto	3.9.49	Bridlington (Yorks.)	10.2.50
Stav.	79389	Ditto	11.9.49	Grimsby (Lincs.)	6.2.50
Stav.	13078	Ditto	4.9.49	Ditto	1.4.50
Stav.	78428	Ditto	20.8.48	Cleethorpes (Lincs.)	19.2.50
Stav.	88598	Ditto	17.8.48	Raheny (Dublin)	21.1.50

DUNLIN (*Calidris alpina*)

C.	896374	Amager, Copenhagen, ad.	31.7.49	Humber (Lincs.)'	—10.49 or —11.49
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RINGED AS MIGRANTS

Stav.	810531	Jæren, S. Norway	1.9.50	Scapa Flow (Orkney)	12.10.50
Stav.	99248	Ditto	27.8.49	Grangemouth (Stirling)	24.9.49
Stav.	8820	Ditto	7.10.50	Beadnell (Northumb.)	4.1.51

<i>Ringed</i>			<i>Recovered</i>	
<i>Stav.</i>	8582	Jæren, S. Norway	5.10.50	Goole (Yorks.) 19.11.50
<i>Stav.</i>	817857	Ditto	10.9.51	Theddlethorpe (Lincs.) 28.11.51
<i>Stav.</i>	810568	Ditto	5.9.51	Great Yarmouth (Norfolk) 17.9.51
<i>Stav.</i>	8865	Ditto	7.10.50	Burton Marshes (Ches.) 6.11.50
<i>Stav.</i>	97106	Ditto	17.8.49	Ballinasloe (Galway) 24.12.50
<i>St.</i>	ZOA6715	Öland, Sweden	4.8.49	R. Nene (Lincs.) 19.11.49
<i>St.</i>	ZOA7507	Ditto	5.8.49	Holbeach (Lincs.) 21.1.51
<i>St.</i>	ZOE348	Ditto	11.9.51	Ditto 28.10.51
<i>St.</i>	ZOD3325	Ditto	21.9.50	Blakeney (Norfolk) —.11.50

PURPLE SANDPIPER (*Calidris maritima*)

<i>C.</i>	794981	Finneidfjord, Norway, young [67° 15' N.]	5.7.48	Cruden Bay (Aberdeen) —.2.50
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REDSHANK (*Tringa totanus*)

<i>B.</i>	8C7041	Turnhout, Belgium young	22.6.50	Abberton (Essex) 7.8.50
<i>P.</i>	GG5537	Gironde, France, ad.	28.3.49	Blakeney (Norfolk) 7.5.51

BAR-TAILED GODWIT (*Limosa lapponica*)

RINGED AS MIGRANTS

<i>Stav.</i>	78378	Jæren, S. Norway	18.8.48	Brancaster (Norfolk) 2.2.50
<i>Stav.</i>	79939	Ditto	20.9.50	Great Yarmouth (Norfolk) 16.10.50
<i>Stav.</i>	79926	Ditto	17.9.50	Haverfordwest (Pemb.) 8.10.50

CURLEW (*Numenius arquata*)

RINGED AS YOUNG

<i>Hs.</i>	C38962	Central Finland	1.6.49	Boston (Lincs.) 17.1.50
<i>Stav.</i>	44399	Jæren, S. Norway	20.5.50	Grey Abbey (Down) 23.9.50
<i>G.</i>	D35265	Gotland, Sweden	4.6.47	Castletown (Westmeath) 24.1.51
<i>G.</i>	D41515	Scania, Sweden	2.6.50	Poole (Dorset) 7.1.51
<i>B.</i>	G4691	Turnhout, Belgium	3.6.50	Ditto 6.9.50

COMMON SNIPE (*Capella gallinago*)

RINGED AS YOUNG

<i>Rk.</i>	6.5119	West Iceland	8.7.50	Abbeyfeale (Limerick) 13.2.51
<i>Rk.</i>	5.3731	Ditto	8.8.47	Glanworth (Cork) 15.10.50
<i>C.</i>	796157	Amager, Copenhagen	28.8.49	Chartham (Kent) 30.12.50
<i>C</i>	694294	Ditto	23.8.50	Rugby (Warwick) 4.10.50

RINGED AS FULL-GROWN

Ringed

Recovered

Rk.	5.3810	West Iceland	26.8.48	Lough Derravaragh (Westmeath)	1.1.51
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JACK SNIFE (*Lymnocyrtus minimus*)

C.	799897	Amager, Copenhagen, migrant	24.7.51	Workshop (Notts.)	26.1.52
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WOODCOCK (*Scolopax rusticola*)

Oslo J.F. (wing-clip)	176	Oslo, Norway, young	5.7.49	Claggan (Galway)	—.12.50
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COMMON TERN (*Sterna hirundo*)

H.	7152750	Mouth of R. Elbe, Germany, young	27.6.51	Topsham (Devon)	12.9.51
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H.	661500A	E. Frisian Is., ad.	1.7.46	Honiton (Devon)	8.5.52
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ARCTIC TERN (*Sterna macrura*)

G.	Br0902	Måkläppen Is. (Scania) Sweden, young	29.5.33	Mouth of Tyne (Durham)	24.7.49
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HERRING-GULL (*Larus argentatus*)

RINGED AS YOUNG

M.	41339C	Murmansk Coast Russia	18.7.49	Lundie (Angus)	26.12.49
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M.	41202C	Ditto	6.7.49	Lowestoft (Suffolk)	3.11.49
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M.	41827C	Ditto	18.7.49	Elmley (Kent)	26.2.50
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O.	036626	Nordland, Norway	25.6.49	Easington (E. Yorks.)	29.10.49
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C.	Mr2025	Katholm, Alsen, Denmark	—.7.48	Feltham (Middlesex)	10.3.50
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GREAT BLACK-BACKED GULL (*Larus marinus*)

RINGED AS YOUNG

M.	151864D	Petsamo, Russian Finland	13.6.49	Balerno (Midlothian)	20.4.50
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Siav.	33959	[69° 25' N : 30° 52' E.] Stavanger, Norway	27.5.51	Bridlington (Yorks.)	10.4.52
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ICELAND GULL (*Larus glaucooides*)

C.	476554	West Greenland, young	14.8.49	Seaton Carew (Durham)	—.7.51
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GUILLEMOT (*Uria aalge*)

M.	29927C	Murmansk Coast, Russia, ad.	27.7.40	West Hartlepool (Durham)	—.5.50
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WATER-RAIL (*Rallus aquaticus*)

C.	595467	Amager, Copenhagen, ad.	15.8.49	Dittisham (Devon)	10.3.50
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MOORHEN (*Gallinula chloropus*)

Sk.	19960	Viborg, Denmark, young	18.5.50	Driffeld (E. Yorks.)	31.1.51
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C.	494318	Copenhagen, Denmark, ad.	20.3.50	Sandbach (Ches.)	24.12.51
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OBITUARY.

WILLIAM EDWIN GLEGG.

WILLIAM EDWIN GLEGG died on February 13th 1952, at the age of 73. He was the second son of Arthur Glegg (who held a post in the Registry House, Edinburgh), and after attending Daniel Stewart's College, learnt brewing with a local firm in Edinburgh. In 1903, after he had married, he came south to take up an appointment with a London brewery at Stamford Hill which, during the 1914 war, was taken over by Messrs. Mann, Crossman & Paulin, and thereafter he lived at their Albion Brewery, Whitechapel.

Epping Forest was within walking distance and Glegg soon became interested in birds. During the first world war he was in the R.A.M.C., and saw service in Macedonia from July, 1917, to April, 1919, keeping careful records of all the birds he saw. After his release from the Army he visited the Natural History Museum on Saturdays to read papers on the birds of Macedonia; I then saw a good deal of him when he was working on his list of birds from that country.

Many of his week-ends at this time were spent tramping about Essex and in course of time he had covered the estuaries and coast line from the Stour to the Thames. The standard work on Essex birds was Miller Christy's small volume, published in 1889. A new work was long overdue and Glegg undertook to remedy this. In 1929 his *Birds of Essex* was published, which that exacting critic, F. C. R. Jourdain, described as a "thoroughly sound and conscientious piece of work." After this Glegg set about preparing a companion work for Middlesex, and in some ways this was an easier task since he was fortunate in securing Harting's unpublished MSS. for a second edition of his well-known book.

It was Glegg's custom to spend as much of his spare time as possible in the field and to devote the long dark evenings of winter to book research in which he was most painstaking. But his interests were far beyond local birds, and he probably knew more of the Camargue than any ornithologist in this country. To the Camargue proper he paid no less than eight visits between 1924 and 1929, and the coast line to the west as far as the Spanish frontier, he visited as many times between 1931 and 1934. These visits were not only made during the breeding season but in autumn and winter as well, so that he acquired a thorough knowledge of the birds at all seasons.

After he retired in 1938 Glegg went to live at Richmond, but owing to the bombing he left for Tring. There he was in his element with the first-rate library in the Museum and an interesting countryside for birds. He always spent one day a week in the field and, after the Americans had taken over the aerodrome near Tring, when he was one day using his field-glasses near the

aerodrome he was promptly arrested and confined under guard and was not released until an official from the Tring Museum had vouched for him as a harmless bird-watcher who had allowed his keenness to outrun his discretion. On my monthly visits to Tring during the war I saw much of Glegg who was always busy with some paper or other. On one of my visits I suggested that he might undertake the registering of the Rothschild collection of eggs consisting of many thousands of specimens. I explained that this was a very tedious business, but nevertheless he undertook the work and completed it without breaking a single egg. The Trustees of the British Museum were so pleased with Glegg's work that they instructed me to write to him and express their thanks and, a little later, made him an Honorary Associate of the Museum.

Glegg was of a rather shy and retiring nature and some people found him difficult to know, but that was not my experience, possibly because we came from the same home town. At times he was inclined to be a little dogmatic and self-opinionated—but that was only after he had gone very carefully into a problem—and was always ready to admit he might be wrong. He was very well read in ornithological literature and his store of information was always at the disposal of others.

Glegg was twice President of the London Natural History Society and for many years held a similar office in the Essex Field Club. From 1947 to 1949, he was honorary secretary of the British Ornithologists' Club and was a very hard-working member of the B.O.U. List Committee.

Besides ornithology Glegg took a great interest in football and cricket and thought nothing of making an early start from Tring to attend all day at an important match at Lords.

He lost his wife in April, 1951, and though he was just as keen and active he had noticeably aged during the last few months. He knew he had not long to live and before he was taken to the hospital he left a note of instructions in his room.

His principal publications are:—

- 1924. "A List of the Birds of Macedonia." *Ibis*.
- 1929. *A History of the Birds of Essex*.
- 1930. "The Birds of Middlesex since 1866." *London Naturalist*, p. 8-32.
- 1931. "The Birds of l'Isle de la Camargue et la Petite Camargue." *Ibis* 209-241, 419-446.
- 1935. *A History of the Birds of Middlesex*.
- 1936. "Field observations on the Birds of the Lagoon-area between the Petite Camargue and the Spanish Frontier." *Ibis* : 125-163.
- 1941. "The Folk-lore of Birds in relation to Essex." *Essex Naturalist*, 27 : 63-82.
- 1942. "A Comparative Consideration of the Status of the Hoopoe (*Upupa epops epops*) in Great Britain and Ireland over a period of a hundred years (1839-1938) with a Review of the breeding records." *Ibis* : 390-434.
- 1943. "Duck Decoys in Essex." *Essex Naturalist*, 27, 191-207.

N.B.K.

NOTES.

Wheatears roosting on railway track.—It is my custom to walk along a mile of a single track railway near Appleby, Westmorland, at about 6.45 on most mornings. There are no night trains on this line and the first train of the day runs at about 7.00. During the spring and summer months I frequently disturb Wheatears (*Ænanthe ænanthe*) roosting under the railway metals. Their usual position is in the lee of the "chair" which holds the rail, but I have seen one come out from a hollow in the ballast by the side of a sleeper.

R. W. ROBSON.

Unusual nest of House-Martin.—*The Handbook* makes no mention of unusual sites or construction of the nests of House-Martins (*Delichon urbica*) and Coward in *Birds of the British Isles and their eggs* states that eccentric nests are not common. On that account it may be of interest to record a nest of this species, built in 1951 at a farm near to the Brine Baths Hotel, Nantwich, Cheshire.

It had been constructed on a braided telephone-wire which ran parallel to, and three inches away from, the wall of the house and a similar distance below the eaves. Unlike the usual type, it was nowhere attached to the wall or eaves, being a complete cup with the wire passing through the rear wall. It was oval in horizontal section and extensions from the cup had been built along the wire (particularly on the right-hand side) making the over-all length about ten inches and helping to give a rigid attachment. It was not possible to reach the nest but it was obviously open at the top and the rim of the cup had been recurved to form a rudimentary covering on the left-hand side. Two broods were reared in it; the second left early in September. There was a colony of over 30 nests at the rear of the farm but this freak nest was the only one built in close proximity to the house.

F. J. BROWN.

Spring display of Sand-Martins.—Attention has recently been drawn to the communal autumn display of the Sand Martin (*Riparia riparia*). The following observations made on May 15th 1951, on the shores of Lough Neagh may be of interest.

On approaching the Lough in the early evening I saw the whole littoral was alive with a swirling stream of hirundines. On closer approach I saw that most of these were Sand-Martins, with perhaps 5% Swallows (*Hirundo rustica*). Also present were a few Swifts (*Apus apus*).

Sand-Martins were chasing each other in small groups without any cohesion—groups of five or six sometimes splitting into pairs, sometimes threes, all keeping up a continuous chattering, chuckling, twittering soft rattling song. When paired, both would be singing. Often three or four would fly slowly (into

wind) within a few feet of me and over the narrow spit of ground upon which I had sat down. Birds showed a desire to settle on fence wires, the flat stones of the shore, or on the dried mud path and short grass. When a pair settled on the ground the leading bird would make a move as of picking up mud. Alternative to this would be for the rear bird to walk or hobble forward with wings held slightly away from the body and head low, keeping up a continuous twittering. Always the rear bird of a pair would settle first, the leader often fluttering as if to alight then flying off.

Birds settling on the wire fence (which ran some fifteen yards into the shallow water) would arrive singly or in pairs or small groups, sometimes resting as if tired, sometimes singing; frequently later arrivals either of the same or subsequent groups (i.e. from one second to a minute or more later) would attempt to mount and on one occasion I saw two birds tiered up on the back of a third for half a second; then all flew off.

Aerial chases never reached any conclusion, no contact being made in the air and there were apparently no long drawn out chases of fixed pairs as in the case of display flights of Swifts. The small number of Swallows present appeared to be similarly occupied though further south by the wooded foreshore where Swallows predominated their behaviour was normal. All the martins were from a mile to a mile and a half from their nearest breeding station.

K. D. G. MITCHELL.

Feeding of Little Grebe above the surface.—In reference to the publication (*antea*, vol. xlv, p. 319) of Great Crested Grebe (*Podiceps cristatus*) and Black-necked Grebes (*Podiceps nigricollis*) feeding on flies above the surface, it can also be said that Little Grebes (*Podiceps ruficollis*) not infrequently adopt the same habit. I have not taken any records except of one at Cheddar Reservoir, Somerset, on May 9th, 1948, observed rearing up from the water with neck stretched to the fullest extent to take flies from the stone buttress wall of one of the water towers.

BERNARD KING.

White-winged Black Terns accompanying Porpoises.—Instances are given (*antea*, vol. xlv, pp. 67-68) of Gannets (*Sula bassana*), Herring-Gulls (*Larus argentatus*) and Black Terns (*Chlidonias niger*) accompanying schools of Porpoises (*Phocæna communis*). I have a similar record of six White-winged Black Terns (*C. leucopterus*) closely accompanying such a school off Cape Bon (Tunisia) on May 4th, 1950; none of the behaviour observed in the other species was noted.

K. E. L. SIMMONS.

Arctic Tern with yellow bill and legs in autumn.—At about 12.30 on November 12th, 1951, G. B. Gooch and I, looking along the sea from the sea-front at Weymouth, noticed a Tern resting on a float some 50 or 60 yards from the shore. The sun was shining

and there was little breeze, so we saw it in very favourable conditions. For ten or fifteen minutes it remained on the buoy and turned its head round enough for the sun to catch both sides of its beak. We particularly noticed the shortness of the legs, a feature that was very easy to observe under these conditions. Eventually it was chased off by a gull, and we finally left it flying off-shore a little further to the east, just beyond the pier. At 2.00 we found it again. This time it was settled on a nearer float, and I watched it through $\times 8$ binoculars from the beach from perhaps 30 yards' distance, whilst G.B.G. watched it with his telescope set at $\times 30$ from the edge of the parade at some 50 yards' distance. It again flew after about ten minutes. This time the sun was hidden by light cloud, so we saw it in flight in both sunshine and cloud.

The most remarkable feature was the colour of the soft parts. The legs were rather pale yellow; the beak was the same colour, perhaps rather paler than the beak of a Little Tern (*Sterna albifrons*); but on really close inspection (the second view) we saw that the ridge of the upper mandible, towards the tip, was blackish.

The plumage colour was as follows: forehead white, crown white mottled grey; top of head to nape black. Mantle fairly uniform pale grey, the primaries perhaps slightly darker. Edge of the wing (lesser coverts) blackish. G.B.G. noticed a few fleckings of brownish feathers on the back, presumably the remains of juvenile plumage. Tail, face and under-parts white or nearly white.

The colour of the mantle and the shape of the wing and the wavy buoyant flight when on the wing all rule out Little Tern, though it seems likely that an observer who is not very familiar with the Little Tern would have recorded it as that species. (The size of a single out-of-season bird, with only large gulls to compare with, is extremely difficult to estimate). G.B.G. and I independently decided, on scanning the plates in *The Handbook*, that the legs were so short that it must have been an Arctic Tern (*Sterna macrura*); otherwise, on plumage points, it would seem if anything to come nearer to Common (*Sterna hirundo*).

Witherby and Tucker were neither of them able to examine many specimens of Arctic Terns in late autumn or early winter plumage. But there is evidence that the change to winter plumage sometimes comes very late. I have myself at least once before seen a "Com-ie" tern in autumn with a yellow bill. I suggest that the yellow bill and legs may be a not uncommon phase in the change from red to black.

H. G. ALEXANDER.

REVIEWS.

King Solomon's Ring. By Konrad Z. Lorenz. (Methuen, London, 1952). 15s.

In this readable and entertaining book Dr. Lorenz gives the background of his remarkable observations on animal behaviour and explains with great charm and simplicity the essentials of the new knowledge which has transformed during the past twenty years our understanding of the psychology of vertebrates in general and of birds in particular. Only one of the chapters—a longish account of the author's Jackdaw colony at Altenberg—deals exclusively with birds, but there are plenty of other references to them and Dr. Lorenz, like Dr. Tinbergen in *The Study of Instinct*, deliberately ranges wider in order to show how much there is in common between the springs of action in birds and other animals, not excepting man. In a chapter on the language of animals Dr. Lorenz reminds his readers that human language which has to be learned afresh by each child is fundamentally different from the innate signal code of birds, consisting of sounds and movements made and understood automatically by members of the species, without any intention of influencing the behaviour of others. He emphasises the power of birds and other animals to transmit and receive subtle indications of one another's intentions—a faculty which in men has been largely superseded by the use of language. He gives an amusing example of a tame parrot which would remark "Na, auf wiedersehen," when a guest was about to leave, but could never be persuaded into uttering it unless the guest's departure was really imminent, which it was able to divine by indications too subtle to be traced. It is incidentally surprising to find in this chapter the Willow-Warbler bracketed with the Red-backed Shrike as a master mimic: this raises the suspicion of an error in Marjorie Kerr Wilson's generally excellent translation.

E.M.N.

Fleas, Flukes and Cuckoos; A Study of Bird Parasites. By Miriam Rothschild and Theresa Clay. (Collins, New Naturalist Special Volume, London, 1952).

21s.

Many ornithologists who have met with problems concerning parasites of birds have been shocked and discouraged by the difficulties of obtaining identifications and elementary information about them, and by the extreme scarcity of authorities to consult on the various groups. These difficulties have been aggravated by the lack of any clear and up-to-date account of the general subject of parasitism as it affects birds—a want which has now been admirably filled by the present work, which achieves the remarkable feat of making its obscure subject not only comprehensible but fascinating to those with no previous knowledge of it. The Editors are justified in claiming through this publication to have made available a new synthesis and given a new stimulus to research, and it is to be hoped that ornithologists will play their full part in studies from which so much can be learnt.

Beginning with a general discussion of parasitism, commensalism and symbiosis, in which ornithological examples are prominent, the authors go on to review the origins and evolution of parasites and the effect of parasitism on the parasite and the host. Then follow separate chapters on fleas, feather lice, protozoa, worms, flies, mites, micro-parasites, the fauna of birds' nests and on two cases of parasitism by birds—the skuas and the European Cuckoo. The Bibliographical Appendix is informative and critical; it includes the somewhat surprising statement that the list of parasites given for each species of bird in Niethammer's *Handbuch der Deutschen Vogelkunde* is totally unreliable and should be ignored. There is a full index, and the illustrations, which are all black and white photographs or drawings, are very good and well-chosen.

E.M.N.

Bird Recognition—Vol. II (Birds of Prey & Water-Fowl). By James Fisher. (Pelican Books, London, 1951). 3s. 6d.

The second volume of this very useful series of cheap books on field identification has at last been published. The first volume, which came out in 1947, has been widely used and is deservedly popular; it is often produced from the pockets of a multitude of young bird-watchers. When one remembers one's youth and the books then available, one realises what books

at such a price mean to the beginner, but the time that has elapsed between the publication of these two volumes has added to the difficulties of those who cannot afford the more expensive books. They have been prone to try and identify from Vol. I any bird they discovered; for example, the present reviewer was summoned (Vol. I was the authority quoted) to see Manx Shearwaters on an inland pool only to find that they were young Coots! It is sincerely to be hoped that the final two volumes will be printed without further delay.

Vol. II maintains the good standard of the first volume. The same system as in Vol. I is employed: the seasonal charts, maps of distribution, the key to field characters, and black-and-white illustrations, all of which provide a maximum of information in a minimum of space. One omission is to be deplored. At the beginning of Vol. I an explanation was given of the seasonal charts, how to read the maps, and how to use the key to field characters, and there was also a diagram of a bird's external parts. None of this is printed in Vol. II; the reader is merely told to refer to Vol. I, although it may well be that he does not own or may simply have lost Vol. I and will therefore lack the help that a beginner at least will need.

The key and the systematic discussion of each species are in the main excellent. It is easy to make small criticisms. For example, the breeding range of Wigeon is given in the text: "in Britain first bred Sutherland 1849", whereas on the map the breeding range before 1837 is shown to cover N. Scotland, W. Ireland and part of Norfolk. Again, the statement that before the last 100 years the Eider bred in Britain only in Shetland, Orkney and Hebrides would have been warmly contested by St. Cuthbert and will be by Miss Grace Watt.

Many of "Fish-Hawk's" illustrations are admirable, but not all. White lines on the heads of Sheldrake and Mallard drake, possibly meant to indicate glossiness, look rather odd (incidentally, if there had been room for a picture of a young Sheld-duck it would have been useful); the heads of duck Teal and duck Pochard are unsatisfactory. Illustrations and silhouettes of birds in flight are most useful, but the bill of the Black-necked Grebe appears to be grossly exaggerated and other drawings might be improved. It should, perhaps be pointed out that the white sometimes seen at the base of the bill of a Tufted Duck is often far greater than is indicated in the text.

Despite the faults of some of the illustrations it must not be thought that this is anything but an excellent and serviceable book. The author has an unusual gift for writing in a succinct, but readable, way; he has assembled his facts well and brought them within the reach of all; his publishers must let him finish the job without more delay. A.W.B.

Three Studies in Bird Character: Bitterns, Herons and Water-Rails. By Lord William Percy. (Country Life, London, 1952). 21s.

In this interesting book Lord William Percy has concentrated on three species which he has had unusual opportunities for observing and recording both by notebook and photograph. He comments on the distraction involved in operating a camera while trying to keep up observation simultaneously, but when this difficulty can be overcome so successfully as it has been here there is no doubt that each type of record is very much reinforced by the other. The linking together in sequence of the numerous photographs gives something of the effect of a cinema film stopped in its tracks, while the intimate connection of photographs and text greatly assists the reader in following the author's experiments with the feeding habits of Bitterns and Water-Rails, for example.

Among interesting points in this book is the author's discussion of the so-called "intake of air" audible before the Bittern's boom (which he inclines to regard as being caused by the reverse process of expelling it from the air-sacs of the body), the curious helplessness of the Bittern when surprised while booming and its surprising ability in walking on reedstalks, the bellicosity, polygamous tendencies and inattention to their nests and young of the males, and in the case of Water-Rails their liking and talent for high-jumping. E.M.N.

INDEX.

THIS index is compiled of the names of the authors of papers and full notes; and of those subjects and species that appear in the titles of papers and all notes—the casual mention of a species in the text is not included, nor are the individual species appearing in the following lists: *Supplementary Notes* (74-77, 372-374), *Reports from Bird Observatories* (227, 297), *Report on Bird Ringing* (265, 341), *The Birds of Inner London* (433), *British Recoveries of Birds Ringed Abroad* (458). Scientific nomenclature is indexed under the specific name, and not under the generic.

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